MORE TO READ I

Eleven years after publishing RAW I and RAW II, the Department of Basic English continues the series with two new reading books.

MORE TO READ I is the first book of the new series aiming to improve the reading skills of Beginner and Elementary level students and thus to help them become better readers.

The Department is grateful to Necmiye Türkan and Canset Cezairlioğlu Türkan for their meticulous work on compiling and editing the material in this book and preparing it for publication. They put a lot of time and effort to achieve the quality we aimed for.

Ayçe Barışık
Chairperson
Department of Basic English, School of Foreign Languages Middle East Technical University

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Foreword

The purpose of this book is to provide students with extra reading and vocabulary tasks to improve their language. The reading texts in the book have been compiled from quizzes and midterms prepared at the DBE for the Beginner, Elementary, Prep and Pre-intermediate Groups between the years 2000 and 2005. Besides reading texts, there are also vocabulary activities prepared to practice the words listed in the Academic Vocabulary List at the end of the book. Although this book is intended for the Beginner, Elementary, and Pre-intermediate students of DBE, we believe that it will also cater for the needs of EFL students in other institutions.

Canset Cezairlioglu Türkan Necmiye Türkan
Ankara, 2006

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Canset Cezairlioğlu Türkan Necmiye Türkan
Ankara, 2006

1 Sonia And Sam

Sam, 54, is from Rosebud, a small town in New Jersey. Rosebud looks like many other towns in the United States. On Main Street, there is a post office and a bank. There is a bookshop between the post office and the bank. Opposite the bank, there is a shopping centre with a supermarket and a clothes shop. Sam's office is next to the post office. Everybody in town knows Sam. He is a good doctor. He is short with dark hair and brown eyes. His wife's name is Sonia. She is tall with blond hair and blue eyes. She is an engineer and she works for a large company in New York City. Every day, she takes the train to the city.

Sonia and Sam live in an old white house on Cleveland Road. They have two children, Ted and Jane. Ted lives in Brazil with his wife, Maria, and Jane lives in Alaska. Ted and Jane's rooms are always ready for them, and sometimes they come to visit. At the weekend, Sonia and Sam work in the garden. Sonia grows flowers and Sam has a large vegetable garden. He likes cooking special meals for their friends using their own fresh vegetables.

2 Los Angeles — The City of Angels

Los Angeles (LA) is the second largest city in America. It's also home to film stars, sunny weather, tall buildings and heavy traffic.

ACCOMMODATION

The hotels in LA are more expensive than those in many other American cities, but they are clean and safe. The Biltmore and The Omni are lovely, and close to special bus stops where you can get cheap rides to various sights.

PLACES TO VISIT

There are many interesting places you can visit, like Venice Beach with its street performers, Universal Studios to see how they make films, and Griffith Park. You can also see the handprints and footprints of film stars outside Grauman's Chinese Theater. Children can visit the Children's Museum — one of the most exciting museums in the world.

EATING OUT

There are famous restaurants you can eat at, like the Buffalo Club, a place packed with famous people, or Musso & Frank's, Hollywood's oldest restaurant. For the most delicious Mexican dishes, eat at the Border Grill.

SHOPPING

You can buy cheap fashionable clothes on Melrose Avenue. Do you want designer clothes? Then go to the expensive shops on Rodeo Drive. A visit there is always unforgettable.

ENTERTAINMENT

The nightlife is exciting on the Sunset Strip, an area in Hollywood with famous clubs like The Whiskey and The Roxy. There you can enjoy rock 'n' roll music. Also, 24-hour cafes like Van Go's Ear are popular with visitors.

LA is a modern city with something for everyone. It's noisy and crowded, but it's also fascinating.

3 Computers And Girls

The girls in the sixth-grade class in East Palo Alto, California, all have the same access to computers as boys. That is to say, boys and girls both have computers which they can use. However, studies show that by the time girls get to high school, they use computers less than boys, and this causes a technology gap.

Janice Weinman of the American Association of University Women says, "Girls tend to be less comfortable than boys with the computer. They use it more to type letters, reports, etc. rather than to find ways of dealing with problems."

The studies show that girls make up only a small percentage of students in computer science classes. Girls usually say that they have less computer ability than boys do. They are less confident when using computers. Besides, they use computers less often than boys outside the classroom.

The instructor of the computer lab in Cesar Chavez School says, "Boys are not so afraid they might do something that will harm the computer, whereas girls are afraid they might cause damage somehow."

Six years ago, the software company Purple Moon also noticed that girls' computer usage was falling behind boys'. Karen Gould of Purple Moon says, "The number-one reason girls don't like computer games is not because they're too violent or too competitive. Girls just find them incredibly boring."

According to the study conducted by Purple Moon, girls want games with people similar to those around them and stories about what is going on in their own lives. Karen Gould says, "there is no real reason why girls wouldn't want to play on a computer; it is just a content thing."

The sponsor of the study says that the technology gap, which separates the girls from the boys, must be closed if women want to compete effectively with men in the job market in the 21st century.

4 Different Countries, Different Eating Habits

Brazil

Brazilians don't like eating alone. They like eating with their friends and family at home or in restaurants. They never have lunch at the office and they eat very late at night — at about ten o'clock. Brazilians like strong coffee in small cups at any time of the day. They make many different fruit drinks and also very good beer. They don't eat on the street or on the bus, and they never eat with their hands. They eat pizza and sandwiches with a knife and fork.

The Philippines

Many Filipinos have three meals a day with two snacks in between. Rice is a part of every meal. People make desserts with it. Filipinos like eating soup, meat, vegetables and a lot of different sauces. In some parts of the country, they make wine. Filipinos usually eat with their families. They eat with a fork and a spoon, or with their hands. It's polite to leave a little food on the plate at the end of a meal.

Finland

In Finland, there are a lot of different dishes. Smoked fish and hot soups are some examples of these dishes. In Finland, fast food includes pizza and sausages, and they are very popular. On the streets, there are stalls and they sell sausages, Finland's favorite food. Finnish people drink a lot of beer. You can buy excellent Finnish beer in every shop in the country. During the week, most families don't usually have dinner together. Sometimes, at the weekends, they eat with their friends. They cook meals together, or each person makes and brings a part of the meal.

5 The Amish

The Amish are a special group of Americans. There are about 85,000 Amish people in the United States. The largest groups live in Ohio, Pennsylvania, Indiana, Iowa and Illinois. The Amish people keep apart from the rest of the world. They live in their own groups; they have their own language and they don't have any relationship with the outside world.

The Amish have a simple life. They grow vegetables and fruits, but they don't have machines on their farms. They don't drive cars. They have horses. They do not have electricity or telephones in their homes.

The Amish are called 'the plain people'. They all wear the same style of clothes. For example, the men all wear dark clothes and hats; the women wear long dresses and hats.

Amish children have one-room school houses. They have Amish teachers. They have no school after the eighth grade.

6 The Man With The Gloves

Michael Greenberg is a popular man. He is not famous in sports or in the arts, but people, especially poor people, on the streets of New York know about him.

For these poor people, he is not Michael or even Mr. Greenberg. For them, he is "Gloves". "Here comes Gloves," they say when they see him walking down the street. How did he get that name? Mr. Greenberg looks like any other businessman. He wears a suit and carries a briefcase, but he is different. In his briefcase there are not only papers and books but also several pairs of gloves. On cold winter days, Mr. Greenberg does not walk quickly down the street like other New Yorkers. He looks around at people; he looks for poor people with cold hands. That is why he carries gloves in his briefcase. He stops when he sees someone poor with no gloves and gives him or her a pair of gloves.

Every day during the winter, Mr. Greenberg gives away gloves. During the rest of the year, he buys gloves. Also, people who know about him send him gloves. He has a mountain of gloves in his apartment. There are gloves of all colors and sizes: children's gloves, work gloves, and evening gloves for ladies.

Why does Mr. Greenberg help these people? When he was a child, his family was poor. However, his father always gave things to other people. He thought it made everyone happier. Michael Greenberg feels the same way. He feels very happy when helping the poor.

7 The Statue Of Liberty

The Statue of Liberty, a universal symbol of freedom and democracy, is on Liberty Island in New York Harbor. It was a gift from the people of France to the people of the United States.

The French sculptor Frédéric Auguste Bartholdi designed the Statue. He started to build the Statue in France in the year 1B75 and the construction finished in 1886. A French ship called the "Isere" brought it to the USA in 350 pieces the same year. Workers spent 4 months to put them together.

The Statue is 93 meters tall from the ground to the tip of the torch. Visitors climb 354 steps or take the elevator to reach the crown. There are 25 windows in the crown. Visitors can rest, take photos and enjoy the scenery of New York City there. The seven rays of the Statue's crown symbolize the seven seas and seven continents of the world. The Lady with the Lamp holds a tablet in her left hand. It reads "July 4, 1776" (in Roman numerals), the Independence Day of America.

There is a museum in the pedestal. More than 5 million people visit it each year and learn about its history there.

The only way to get to the Statue is by ferryboat. Ferryboats take visitors to the Island every 30 minutes. The entrance to the Statue is free, but the ferry tickets cost $10 for adults and $4 for children aged 4-12. Children under 4 don't pay any money.

8 A New Artist in New York

A new show of paintings opened in New York last week. The name of the artist is Maria Arroyo. People in New York don't know her, but she is quite famous in some other countries. She grew up in Mexico. She studied with several famous artists there. In 1995, she married Ted Diamond, a reporter for the New York Gazette. The same year, Maria and Ted moved to Brazil. Maria won a lot of important awards in Brazil, and she showed her work in Mexico and other countries. Her work is very popular in these countries now.

Maria Arroyo is a small, quiet person, but her paintings are very large. They are full of color and excitement. She says that she uses Mexican colors. In Mexico, the sky and the sea are usually very bright blue. The houses often have bright colors too: pink, yellow, or orange.

In her paintings, the excitement comes partly from these colors. It also comes from her style. She paints large forms that seem to move. Mario Arroyo's paintings aren't like photographs. They do not show us houses, flowers, clouds or boats. Instead, her paintings show us her feelings about the world.

We look forward to seeing more work from this excellent artist.

The New York Times by Sandra Woolf

9 An All-Boy Band

The Backstreet Boys, or BSB, is an American all-boy band. The band started with Howie Dorough, AJ McLean and Nick Carter.

AJ worked as a model when he was six. At that time, he also acted in school plays. When he was fourteen, he met Howie. Howie had had roles in films and plays. They became friends and went to auditions together. They met Nick at one of them. AJ, Howie, and Nick started singing together for a record company called Transcontinental Records.

The record company owner, Lou Perlman, had a friend who knew Kevin Richardson. Kevin had a job at Disney World in Orlando at the time. When Lou's friend told Kevin about the new group, Kevin decided to meet them. The four became friends and Kevin joined the group. Lou wanted one more person for the group. The fifth member was Brian Littrell, Kevin's cousin.

BSB released their first album in 1996. They received a gold record for this album. The second one followed in late 1997, but it was not as successful as the first.

BSB has got fans in many countries. You might even be a fan of this great band. If you want to write to them, here is the address: Backstreet Boys, Post Office Box 618203, Orlando, FL 32861-8203.

10 Buddy Holly

Buddy Holly was born in the small town of Lubbock, in the state of Texas, on 7th September, 1936. His name then was Charles Hardin Holly, not 'Buddy Holly'. In his short life, he became one of the greatest rock 'n' roll musicians of the 1950s.

In January 1959, Buddy Holly began a concert tour with some other musicians. They were on tour for nearly a month, going from one place to another every day. On 2nd February, they were in Iowa, in the central United States, and they were very tired. That night, after the concert, Buddy made a suggestion. "Let's go to our next concert by plane tonight." The other musicians liked Buddy's idea. They immediately said "yes".

The same night at 1 a.m., Buddy and his two friends were on the plane. They were on their way to Minnesota for their next concert. It was a cold and windy night. It was snowing too. Then, something bad happened. People saw the lights of the small plane come slowly down and down. Suddenly, they disappeared. Maybe it was the pilot's mistake, or maybe there was a technical problem, but no one found out the reason for the accident.

Buddy Holly, one of the great American rock stars, and his two friends died tragically in the accident. He was only 23 years old.

11 Tiku

My name is Tiku. I am an Aborigine from Alice Springs in the center of Australia. That is where many Aborigines live. We are different from the other people in Australia because we have brown skin. We are actually the original people of Australia. The white people came here in 1788 and took our land. After that, we learned to live with them.

In Aboriginal culture, we do not own land. The land is for everyone. The animals and plants are for everyone but the white people take the land and use it for farms. They cannot understand our ideas about land and its importance for us.

Life is not easy for me because I am an Aborigine. University life is also difficult because most universities are in big cities. They are far from our homes in the center of Australia. There are many Aborigines in Alice Springs, but I am the only Aborigine in my class at university so I feel that I'm different. Universities are very expensive. We have to buy many books but we are poor.

I am the first Aborigine woman to go to university. I want to be a teacher because there aren't many Aboriginal teachers in our schools. I want to teach my people our history. I do not want Aboriginal children to forget their history. They learn only Australian history at schools but that is different from our history.

Aboriginal history is not written in history books. Everybody learns it from their grandparents. They tell stories, and these stories are very important because they explain our history. They tell about the beginning of the world and about the land, trees and animals. They teach us many things about Aboriginal life and help us to understand the difference between right and wrong.

I want to learn new things at the university but I also want to learn things from my grandmother, who tells us stories. She never went to school, but she is a very wise woman. She knows many things about Aboriginal culture. She teaches me these things so that I can share them with other Australian students. Then, the white people can better understand us.

12 Natalie Imbruglia

Natalie Imbruglia was born in 1975 in a small town two hours from Sydney, Australia. She is the second daughter of a family with four girls. Her father is Italian and her mother is Australian. She took tap dancing and ballet lessons when she was a child. She danced 6 days a week, mainly after school. When she was fifteen, she went to a drama school. She became famous when she started acting in the Australian TV series *Neighbours*. Two years later, she got bored with it and left.

In 1994, she moved to London. She needed to earn money, so she started writing songs. In 1996, she met Mark Fox, creative director for BMG publishing. She showed her work to him and he liked it so much that he contacted Phil Thornally, a former member of the rock band The Cure. Then, they recorded her hit song, "Torn". It was so popular that almost all major radio stations around the world played it again and again. In 1998, she made her first album "Left of the Middle". It was very successful and it brought her many prizes, including MTV Music Video Awards, the Australian Record Industry Awards and MTV Europe Video Music Awards.

Now, Natalie lives alone in West Hampstead, London. She still loves acting and she acted in Johnny English together with John Malkovich, but she wants to go on writing and singing her songs for a while. In April 2005, she released her third album. The first single from this album was "Shiver" and it became her longest running single.

13 Celine Dion

Celine Dion, one of the biggest international stars in pop music history, was born in Canada in 1968. She is the youngest of the 14 children in the Dion family. She began singing in her parents' piano bar when she was just 5 years old. When she was 12, she recorded one of her first songs *" Ce N'etait Qu'un Reve*" ("*It Was Only a Dream*"), with the help of her brother Michel and her mother. Michel sent this song to a manager named Rene Angelil. When he listened to the demo tape, he decided to become her manager. At the beginning, Celine became famous only in Canada and France because all her songs were in French. At the age of 18, Celine saw Michael Jackson performing on TV and told Angelil she wanted to be a star like him. Angelil sent her to an English school to learn English, and also he changed her hair style and her physical appearance. Celine was now ready to be successful in the USA with her new image. Her first international success was the theme song for Disney's *"The Beauty and the Beast*". The song won both a Grammy and an Academy Award and topped the pop charts. In 1994, she got married to Angelil, who is 26 years older than her. In 1996, she won another Grammy Award and was invited to the opening ceremonies of the Atlanta Olympics. The following year, she sang "*My Heart Will Go On*", the theme song of the film "*Titanic*", and was once again number one. In 1999, she announced that her husband had throat cancer, so she had to take a break to spend more time at home. Two years later, she gave birth to her son. Dion returned to the public eye in 2002 with her hit "*A New Day Has Come*". She is still one of the hardest working stars in show business.

14 Hetty Robinson

Hetty Robinson learnt all about money when she was very young. As a child, she read the financial pages of the newspapers to her rich father. Her father died when Hetty was 30 years old and she inherited $1 million. When she herself died, her two children received a fortune of more than $100 million.

Hetty made her money on the New York stock exchange. She was a genius. She was named 'the Witch of Wall Street' because she made money quite easily. She was one of the richest women in the world, but she was very mean; she counted every cent and she spent very little. She didn't own a house because she didn't want to pay property taxes. She and her children lived in cheap hotels.

She spent almost nothing on clothes, and wore the same black dress every day. She washed it herself, but she only washed the bottom of the dress, where it touched the ground, because she didn't want to spend money on soap. Other people had their own offices, but Hetty used a desk in the bank where she kept her money because it didn't cost anything. She sat in the bank and ate her sandwiches while she bought stocks and shares. If the bank complained, she just moved all her money to another bank.

Hetty's family paid the price for her meanness. When she was 33, she married a millionaire, Edward Green, and they had two children. Green, however, lost all his money, so Hetty left him. When her son, Ned, hurt his knee in an accident, Hetty didn't want to pay for a doctor, so she took him to a hospital for poor people. The doctor knew that Hetty was wealthy and asked for money, but Hetty didn't pay any money and took the boy away. His leg didn't get better and two years later doctors removed it.

But in the end Ned got his revenge. At the age of 81, Hetty had an argument with a shop assistant about the price of a bottle of milk. She got so angry that she had a heart attack and died. She left half of her money to her son, who spent it all on parties, holidays and expensive jewellery.

15 A New Dowry Item: The Computer

Min Huang is a banker in a small city in China. She surprised her new in-laws when she showed them a computer in her dowry. It was there with the traditional items like furniture, dishes and linen.

When the family asked about the computer, she explained that she wanted to improve her professional skills. Her office was computerized. "I also hope to connect to the Internet at home to broaden my horizons," she said. When she told her parents that she wanted a computer for her dowry, they didn't hesitate to buy her one. They knew a computer would be important to her and to her new family's future.

People who study Chinese marriage customs are very interested in this story. According to those customs, the groom's parents are responsible for the couple's housing. The bride's family supplies the daily necessities. However, the contents of the dowry have changed over time. In the past, when rural people lived in fairly harsh conditions, they usually provided grain and clothing for daughters who would soon be married. This showed their desire to protect them from hunger and cold.

In the 1950s, farm equipment and animals became popular items. Parents hoped that their daughters' lives could be improved through hard work. Modern times, however, brought the need for VCRs, stereos and computers. Through these dowry items, parents hope that their daughters will be part of a successful, modern world.

Min's parents said, "We want our daughter to be part of a new world. A computer is part of that world." Min completely agrees, and is thankful to have such generous and intelligent parents.

16 Mirrors

Mirrors have always been considered as having special powers. The superstition that breaking a mirror is bad luck is very, very old. This belief can be observed in some form in most cultures around the world, but, in fact, the first mirrors could not really be broken because they were made of water. People looked at themselves in lakes, ponds and rivers because they believed that by looking at their reflection in the water they could learn about their future. If the water was calm and the reflection was clear, this was considered a good sign meaning that good things would happen to the person. On the other hand, if the water was rough, i.e. not calm, and the reflection was distorted and hard to see, this was a sign that the future would be bad.

In the first century B.C., the Romans used to read water fortunes. You could go to a seer, a person with special powers, and have him or her tell you what your future would be. The seer would ask you to hold a bowl of water and look into it and then he or she would study your reflection and tell you what was going to happen to you. If you dropped the bowl, it meant that you had no future, a very bad sign.

Ancient people had the idea that a person's reflection was actually the person's soul and that the soul existed outside the body in the reflection. Therefore, if the mirror broke (or the water bowl was dropped), it meant that the soul would be destroyed and the person would soon die. In many cultures, people believed that it was dangerous for a person to look at his/her own image too long. This was because they believed the soul in the reflected image could pull the life out of the person. Similarly, The Basutos (a Bantu tribe in South Africa) believed that crocodiles could drag a person's reflection under water and kill it.

In the sixth century B.C., the Romans changed their ideas about mirror fortunes a little. At this time, they believed that a person's health and fortune changed every seven years. Therefore, if you broke a mirror, it was not quite as bad as before: You would have seven years of bad health and general bad luck, but at least you probably wouldn't die.

However, Chinese people believed that a well-placed mirror could protect you from evil. This was because they thought bad spirits would be frightened by their own image in the mirror and would then leave people alone. There is an ancient Chinese saying: "When evil recognizes itself, it destroys itself." Therefore, brass mirrors were often placed in the bedrooms to scare evil spirits. They were supposed to protect people while they were sleeping.

17 Future Cities In The Sea

In some coastal countries where there is not enough land for an increasing population, living space can expand into the sea. For example, the land area of Hong Kong is small, but the population is large. Therefore, many of the city's poor are unable to find affordable homes in the city itself. They dwell in boats that are tied close to each other by the shore. Such floating towns have given new ideas to a number of architects from different countries. These architects are working on several futuristic designs for oceanic cities. One of these designs, by Eckhard Schulze-Fielitz, is a huge city called "New Venice." It will be built on floating containers. The idea of floating cities has attracted special attention in Japan, which has an enormous population density. Like Schulze-Fielitz, the Japanese architect Kiyonori Kikutake has also suggested floating containers in his design of a town called "Unabara" (Ocean). Another Japanese architect, Hidezo Kobayashi, has proposed building a city, actually a safer one, in a bay which will extend an existing city from the shore into the ocean. It will use both structures that float and structures that are securely tied to the bottom. Boats will pass over and around this city, and waves and tides will provide its energy. Kobayashi's city will also be a base for taking out mineral deposits that lie on the ocean floor.

18 Going For Gold

Gold was probably first found on the ground and used by prehistoric man in tool-making. In ancient times, it was made into plates, cups, vases and vessels of all kinds, and of course, jewelry. The first use of gold as money occurred in Anatolia in 670 BC, but it has always been accepted as money anywhere in the world. Sailors, for example, wore a gold earring. If they were shipwrecked, they could exchange it to get home again. Gold is still given to military pilots for the same reason. People have always been fascinated by gold. How many times have people killed others and how many lives have been lost for it? The gold of the Pharaohs was stolen from their tombs in the Pyramids. The Inca and Aztec empires were destroyed for gold. Later in history, hundreds of men from other civilizations died in the jungles of South America as they searched for the golden city of Eldorado. In 1849, thousands of people left their homes to join the California Gold Rush. Many were killed by Indians and diseases such as cholera, tuberculosis, chicken pox and the Black Death.

Pure gold is rare both in nature and in manufacturing. It is usually mixed with other metals. The proportion of gold is shown in carats. If the carat number is high, this means there is more gold but fewer other metals in it. Pure gold is twenty four carat and the cheapest is nine carat. The word carat comes from the Greek word, keration, which means a carob seed. These seeds were used to weigh gold and diamonds.

Most gold today is found in South Africa (612 tons a year) and North America (459 tons a year). About 83% of it is used for jewelry. Of the rest, about 9% is used by industry, about 6% is used for coins and 2% is made into gold teeth. Gold is usually found in very small pieces or nuggets. The largest nugget, the Holtermann Nugget, was found in 1872 in Australia. Its weight was 214 kilograms.

The largest reserves of gold are held in the USA in the Federal Reserve Bank and at Fort Knox. The second biggest stores are held by the Bank of England and the Bank of France. Not all of this gold belongs to the governments of these countries. A lot of it is owned by companies, other governments and individuals. When gold is bought and sold, it isn't usually moved. Only the names on a piece of paper are changed. The gold itself stays in the bank.

Today, gold is still the most important and valuable metal. And man has used it in many different fields. For example, in the 1920s doctors in France started using gold to treat a disease called rheumatoid arthritis. In the 1960s, scientists used gold-coated mirrors to maximize infrared reflection. In the 1980s, car manufacturers used gold for the metal parts of airbags.

19 The Beetle: A Legend On Wheels

One of Hitler's dreams was to increase the number of car owners in Germany, so he employed Dr. Ferdinand Porsche, the well-known constructor, to design an affordable and reliable car for the people. Hider and Porsche often had arguments, but Porsche was afraid of him, so he stayed in the project and continued his work in the Wolfsburg car factory. In 1938, the factory produced the first cheap car "for the people". It included all the characteristics that Hitler ordered. The engine was at the back of the car and it had quite a specific shape: it was very round and it looked like an insect. That was the reason why it was called "Beetle".

During World War II, the Germans used the Wolfsburg car factory to make all-terrain cars — Kubelwagens — and airplanes for the army. However, as soon as the war ended, Beetle production started again and the Beetle immediately became even more popular than Ford's Model 'T'. The great success started with the import of Beetles to Holland in 1947. By 1972, the total number of Beetle cars produced had increased to over 15,000,000.

Then sales started to go down because the Beetle was still a 1940s design, although there were some small changes in the engine. In the end, the Beetle lost the war against technology. In 1974, the new Golf model replaced the Beetle in the Wolfsburg car factory. The car designers decided to make a car completely different from their original Beetle model. In 1975, Volkswagen introduced this new Golf in the United States where it was called the 'Rabbit'.

Over the years, the Germans produced many models of Volkswagens, using the Beetle and Golf as a starting point and including many other concepts and standards. These were produced in Emden, Osnabruck, Wolfsburg and other German cities. Today many people say that Volkswagens are among the most comfortable and powerful cars in Europe.

The production of the Beetle in Germany ended in 1978. However, in the early 1980s, there were still millions of Beetles on the road. People formed Beetle Clubs all around the world thinking that it would never disappear. Around 1990, there were fewer Beetles on the road. Today, it is almost impossible to see the Beetle in the streets, but the owners of the few remaining Beetle models still try to keep their small cars in the best possible condition. They enjoy driving the Beetle because it has a history behind it. This makes it very special for them.

20 An Unusual Style

Leonardo da Vinci was one of the most interesting characters of the Italian Renaissance. He wrote in Italian using a special kind of shorthand that he invented himself. People who study his notebooks have long been puzzled by something else, however. He usually used "mirror writing," starting at the right side of the page and moving to the left. Not only did Leonardo write in mirror-image script from right to left, but he used strange spellings and abbreviations, and his notes were not arranged in any logical order. He only wrote in the normal direction when he was writing something intended for other people. People who were contemporaries of Leonardo left records saying that they saw him write and paint left- handed. He also made sketches showing his own left hand at work. Being left-handed was highly unusual in Leonardo's time. Because people were superstitious, children who naturally started using their left hands to write and draw were forced to use their right hands.

No one knows why Leonardo used mirror writing, though several possibilities have been suggested. Some believe that he was trying to make it harder for people to read his notes and steal his ideas. Others think that he was hiding his scientific ideas from the powerful Roman Catholic Church, whose teachings sometimes disagreed with what Leonardo observed. Another possibility is that writing from left to right was messy because the ink just put down would spread as his hand moved across it; therefore, Leonardo chose to write in reverse because it prevented smudging. Over 4,000 pages of Leonardo's scientific and technical observations in his handwritten manuscripts have survived. It seems that Leonardo planned to publish them as a great encyclopedia of knowledge, but like many of his projects, this one was never finished. After his death, his notes were scattered among libraries and collections all over Europe. While Leonardo's technical treatises on painting were published as early as 1651, most of his scientific work remained unknown until the 19th century.

21 Color Therapy

Color therapy is the use of color in a variety of ways to promote health and healing. Used to treat both physical and emotional problems, color therapy may involve exposure to colored lights, massages using color-saturated oils, visualizing colors, even wearing colored clothing and eating colored foods.

Color has played a role in healing for centuries. In ancient Egypt, patients were treated in rooms specifically designed to break up the sun's rays into separate colors. In Iraq, people also made regular pilgrimages to the Hanging Gardens of Babylon to take advantage of the healing colors of the exotic plants and flowers found there. In India, practitioners of Ayurveda taught that specific colors corresponded with the seven chakras, each of which is an energy center that represents organs, emotions, or aspects of the spirit.

However, modern-day color theory was born in the late 17th century when Sir Isaac Newton did his prism experiments and showed that light is a mixture of colors from the visible spectrum. Although doctors used color to treat everything from psychological problems to smallpox over the next hundred years, interest in colors' effects on healing didn't really become widespread until 1878, when Dr. Edwin Babbitt published his book *Principles of Light and Color*. In his book, he explained his work in chromatotherapy, that is, healing with colored lights, and suggested it as a treatment for a variety of ailments, including burns, nervous excitability, and cold in the extremities.

Probably the most extensive and detailed work on colored light therapy, however, was done by Dr. Dinshah P. Ghadiali who had studied Babbitt's work. In 1920, he introduced a system of colored lights, which he named "Spectro-Chrome" lamps. These were used as a treatment for such diseases as diabetes, tuberculosis, and chronic gonorrhea. Although they were considered logical and effective by the doctors who succeeded with them, many others regarded them as ridiculous. Still, this work continues to inspire many color therapists today.

In 1947, Swiss psychologist Dr. Max Lüscher introduced the Lüscher Color Test, a form of color therapy still widely used by many psychologists. The test involves choosing 43 colors from a total of 73 possibilities. By observing the colors a person chooses or rejects, and the therapist can learn about his psychological state. For example, if a person selects darker colors, it suggests a need for rest and stress reduction. At about the same time, Russian researcher S.V. Krakov was conducting a series of experiments to show how color can affect the nervous system. He observed that red light stimulated the adrenal glands; therefore, it raised blood pressure and pulse rate. On the other hand, blue and white

light had a calming effect. Although there are still no studies supporting Krakov's work, today, many practitioners recommend color therapy for stress.

In recent years, interest in color therapy has grown as studies have shown the positive effects on different forms of depression. Mainstream researchers are looking into its use for a variety of other illnesses as well, from sleep disorders to hormonal problems. In addition, over the past decade, Aura-Soma, an Eastern-influenced therapy that uses colored bottles of essential oils, has gained popularity. Moreover, Esogetic Colorpuncture Therapy, which focuses colored light on acupuncture points, is being studied as a treatment for a variety of health problems, including migraines, bronchitis, and uterine fibroids.

22 Cities In The Sea

As the earth's human population grows rapidly, satisfying basic human needs becomes more difficult. Living space and shelter are among our primary requirements. Some parts of the world are simply running out of room for their increasing populations, and people are beginning to look to the sea for additional space. Other basic requirements of human life are food and natural resources. It is no longer enough to farm and mine the lands of the earth for foodstuffs and minerals. Consequently, we have begun to obtain some of the vast mineral and agricultural wealth of the oceans. In recent years, mining and drilling in the sea have added to our stores of oil and gas. In addition, deep sea exploration and mining will soon give access to the rare minerals on the ocean floor. There are, therefore, two reasons why it may become necessary to learn to live in the sea. First, we might need some of its immense area for living space. Second, we might need to make use of the resources that lie in its depths. There are already a number of proposals and experiments that may help to achieve these goals.

In the early 1970s, the Japanese began the construction of Aquapolis on the main Japanese island of Honshu. It is a prototype of futuristic floating cities designed to run on wind, and tidal energy. It uses a biological waste-water system, which disposes of sewage by means of a species of green algae known as chlorella, rather than by chemical means.

The time may come when floating cities such as Aquapolis exist not only as permanent extensions of land-based habitats but also as free-floating platforms. These would drift from continent to continent across the deep oceans. Such cities would permit deep sea miners and their families to live near their work places on the ocean floor, but at the same time, miners working on the ocean bottom would face a set of problems. One such problem would be the enormous pressure exerted by the ocean at great depths. Another would be the lack of easy access to air.

To study these difficulties, and to test human adaptability to life beneath the sea, scientists have been carrying out several experiments within the last century. The first of these was the Conshelf I Habitat. In 1962, a team, directed by Jacques-Yves Cousteau, remained at a depth of ten meters in the Mediterranean Sea for seven days. The results of this experiment led to the building of the Conshelf II Habitat, where five oceanauts lived successfully at eleven meters. Data from these experiments made possible the construction of Conshelf III in 1964, when two men lived at a depth of 132 meters for forty-eight hours. In the same year The United States Navy tested Sealab I, in which four men lived at a depth of nearly 60 meters for nine days. They found the environment comfortable at a temperature of twenty-nine degrees Celsius and a relative humidity of 72 percent. From these experiments, scientists learned that daily swimming at these depths caused oceanauts to show symptoms of stress.

In spite of minor drawbacks, those experiments have proved the possibility of living in the sea. Their success has encouraged the architect Warren Chalk to design an entire underwater city, which would make maximum use of space, and would enable entire human populations to live safely and comfortably far beneath the sea for long periods.

Obviously, deep sea living has its physical dangers and psychological drawbacks like being in isolation. Nevertheless, due to the necessity of meeting our primary requirements, we may build underwater cities which may even be connected by advanced systems of communication and transportation. Perhaps our children will live in what futurist Alvin Toffler calls "the New Atlantis."

23 IQ or EQ?

"If you are lucky, your looks, the right contacts, and a presentable set of qualifications might get you on the first step of the career ladder. However, it's some other qualities that will lift you to the top. While your IQ (intelligence quotient) might get you hired, it's your EQ (emotional quotient) that will get you promoted, says Daniel Goleman in his book *Emotional Intelligence*, which became a best seller in just two weeks after being published in 1999. Like IQ, EQ claims to measure intelligence, but EQ cannot be calculated in numbers. It is a complex mixture of the qualities that make us who we are. Where IQ claims to measure pure brainpower, EQ embraces all-important factors such as sociability, optimism and empathy, qualities that gained significance in the 1990s-working environment.

Co-operation, communication, and the ability to listen to others and to speak one's mind are all important aspects of social interaction in modern business, and the most productive workers tend to be those who are good at motivating themselves and working with m a team — not necessarily the ones who are 'the most intelligent on paper'. People with high IQs may be able to solve the most complicated mathematical formula or scribble symphonies on the back of a cornflakes packet, but they usually tend to be at a bit of a loss when it comes to understanding how to behave in company — not to mention being rather boring to have at parties.

According to Geraldine Bown, Chief Executive of the Domino Group, a human resource management consultancy, one of the most exciting findings to come out of the EQ discovery is the fact that high EQ qualities are those traditionally associated with a feminine or "soft" approach to management. "Now that training gurus are talking about how people need to get in touch with their intuitive selves, they are sending senior male managers on courses to learn how to understand their own feelings," she says. "And, all the time, they have organisations full of women already well in touch with theirs! It's just these qualities that will be advantageous in the future".

Beverly Alimo, Senior Lecturer in Organisational Psychology at the Nuffield Institute for Health has researched leadership qualities in men and women. Her work shows that women are more likely than men to share power and try to enhance other people's self-confidence. What is more, this EQ-driven style of leadership is so much better suited to modern organisations. "We know women are more likely to exhibit a real understanding of human behaviour," she says. "They think through the consequences and the effect on others before they act."

According to Dr. Alexis Hallam, Occupational Consultant Psychologist at Career Analysts, the main aspect of emotional intelligence is self-awareness. Thinking about how you feel improves your

ability to work well. Really understanding how you feel and analyzing emotions about your work could also help you make better decisions about your career. "Most people go for extra qualifications to break through career barriers," she says. "What they don't understand is that in order to move up through organizations, more than extra qualifications and pure brain power is needed." Therefore, next time you feel inadequate because you know you'll never be a rocket scientist, remind yourself that you may, in fact, be cleverer than you think.

24 Bgm: More Than It Seems

Elevator or background music (BGM), which is often referred to as "Muzak," dominates our world. It is easier to think of places that lack BGM than to list all those where it is found. Most establishments where we purchase goods, services, food, or drink have BGM. Many workplaces like factories or offices have it, too. BGM is currently being marketed for the home in digital stereo as well.

BGM is not a modern invention. It has been in demand since people started recording music. Moreover, contrary to common belief, it is not composed only by second-rate composers but also by world-famous composers: Handel, Mozart, Beethoven, and other masters produced music that was intended for "background" listening, often for dinner parties of the aristocracy. One major difference between former times and recent times is that today BGM is more affordable and available. The widespread and increasing presence of commercial BGM shows that BGM is very effective in changing human behavior. For example, one study of the effectiveness of music in supermarkets showed that the use of slow music increased sales. Shoppers stayed in the store longer and purchased more. The average gain of each supermarket was between $12,000 and $16,000, an increase of nearly 40%.

Why might the use of music be so effective throughout society? One very strong possibility is the powerful influence of music on the communication and creation of emotions and moods. Moreover, music may provide a form of non-verbal communication whose message cannot be expressed in words. Thus, music can rapidly and powerfully set moods in a way that cannot be achieved by other means.

Moreover, sound can spread through a place and reach all potential audiences simultaneously. This is something achieved by visual images only in special circumstances, as in a cinema. However, here too, BGM has an important role. If you think for a moment, you will probably realize that without music, the impact of a movie would be dramatically reduced. Moreover, researchers have shown that filmed events can be remembered significantly better when they are accompanied by music, particularly music that fits the mood of the visual images.

BGM is also effective in altering and directing people's opinions. For example, market researchers, who advise advertising agencies and their clients, make a clear distinction between purchasing situations: some require the use of high cognitive processes while others require low cognitive processes but with high emotional involvement. What do jewelry, sportswear, cosmetics, and beer have in common? They are rated as fitting the latter category, i.e., not much thought but plenty of feelings. Music has been shown to be quite effective in increasing the purchase of these products. On

the other hand, music seems to be much less effective when one is trying to sell a PC, a camera, or insurance, which are "high cognitive" items.

The fact that BGM has strong effects on behavior by communicating moods and emotions is supported by studies like those proving the impact of music on the purchase of consumer goods. Thus, we should maintain an awareness of the powerful effects of music on human emotions.

25 Ancient Artifacts And Ancient Air

Archeologists made an exciting discovery in Egypt in 1954. During an excavation[1] near the base of the Great Pyramid, they uncovered an ancient crypt, or an underground room. They believed that this discovery would help us understand Egypt's past. They also hoped that it would give us important information about the future.

This crypt was a tomb (i.e. a burial place) for a dead Egyptian king. Historians believed that the Egyptians buried their kings with two boats: one to carry the body and the other to carry the soul. This was one of their religious customs about death. Therefore, the archeologists expected to find two boats inside the crypt. As they opened the crypt, they smelled the scent of wood. The ancient Egyptians had closed the room so effectively that the aroma of the cedar wood was still there. Inside the crypt, archeologists found a 4,600-year-old boat that was in almost perfect condition. In addition, they found another crypt next to the first one. Archeologists and historians believed that this crypt contained the second boat. If so, they would have better information about the past. They would be sure about the religious custom of burying kings with two boats.

However, this was not the only information they hoped to find. They wondered if the air in the two rooms contained something special that helped to preserve the wood from changing. Researchers hoped to find some clues about the future by carefully examining the air in the second crypt. They thought that this information could help them in the preservation of ancient artifacts (objects) in museums throughout the world. When the archeologists opened the first crypt, all the old air escaped. They wanted to recover the air in the second crypt to compare it with the present air, and then examine the differences, especially differences in the level of carbon dioxide. Careful planning would be necessary in order to open the second crypt and save the air. In fact, it took years to plan the excavation and to design and make the equipment necessary to open the second crypt and collect the air inside it.

Finally, in October 1986, an international team of scientists and archeologists, using special equipment, opened a hole in the roof of the crypt. They sealed the hole they had made. That is, they carefully closed it so as to prevent the air inside the second crypt from escaping. Then, they took an air sample. The air inside was the same as the one outside. The scientists were very disappointed but they continued working to see what was inside the crypt. Attached at the end of a long rope, a light and a camera were lowered through the small hole, and the archeologists looked at the inside of the room on a television monitor. The second boat was really there!

[1] Excavation: reoving eart that is covering very old objects buried in the ground.

After the scientists and archeologists took samples of the air inside and photographed it completely, they closed up the hole in the roof and left the crypt as they had found it. Although they were disappointed about their findings of the air inside the crypt, they were able to prove the Egyptian custom of burying kings with two boats. More importantly, they practiced a new, nondestructive approach to archeology: investigate an ancient location, photograph it and leave it untouched. After examining the photographs they had taken, scientists and archeologists realized that the second boat was not as well preserved as the first one. They thought that this might be due to the construction of the museum after the first excavation. After archeologists had opened the first crypt years ago and removed the boat, the Egyptian government had built a museum on the site of the first boat. During the construction of the museum, the vibrations from the heavy machinery had probably damaged the second crypt and destroyed the seal, so the second boat was not in perfect condition.

The investigation of the second chamber taught archeologists a valuable lesson. New excavations will not only use modern technology but also follow the idea of preserving the entire location for future studies.

26 Just As Good As The Original?

In 1979, the painter Tom Keating was arrested and charged with forgery. He was accused of faking and selling a painting by Samuel Palmer, an early nineteenth-century British artist. Everyone in the art world was shocked when Keating admitted faking more than 2,000 paintings by various artists over a period of 20 years. He couldn't remember the exact number. Nor could he remember whom he had sold them to, which meant that many of his fakes could not be traced. As a young man, Keating had been employed by art dealers to make copies of paintings by well-known artists whose original paintings sold for high prices. He was paid very little for this work and assumed that his paintings were also being sold for low prices because they were copies. He then discovered by chance that the dealers who employed him were selling his copies as originals for hundreds of times the price that they paid him. This experience made him very angry, and he decided to teach them a lesson in his own way. He set about producing large numbers of fakes by over 100 artists as he was sure that most art dealers and art critics could not tell the difference between the genuine and the fake.

Keating had a rather casual attitude to his paintings. He often gave them away or sold them cheaply. Many unsuspecting people thought they had picked up a bargain from him. In fact, he had not made himself rich, but he took great delight in fooling so-called experts. What he wrote on the canvas also reflected his sense of humor. Before starting to paint, he would write the word 'FAKE' or 'KEATING' or sometimes a vulgar word. The word would be covered by paint but would show up if anyone took the trouble to X-ray the paintings. Having X-rayed paintings, some famous museums discreetly removed Keatings from their walls. Although he faked paintings by many artists, Keating specialized in the works of Samuel Palmer. Unfortunately, Palmer's genuine output was quite small, much less than Keatings, and soon the number of 'previously unknown' or 'just discovered' Palmers coming on to the market began to arouse suspicion. He admitted in court that he was rather ashamed of the particular painting he had been charged with faking: it wasn't up to his usual standard. He admitted everything and took great delight in showing the greed of the dealers. They had once exploited him and cheated their customers. He did not go to prison, as the charges against him were dropped because of his poor health. After the trial, which had received a lot of publicity, he became very well-known and appeared 6n television. He actually painted a Samuel Palmer in about half an hour in the television studio, with the whole process being filmed. Later, he had his own television series in which he taught his painting techniques. There is no doubt that Keating had remarkable talent, and at the end of his life he received many orders for his own work. Nowadays, even his fakes sell for quite high prices.

27 The Healing Power Of Music

Marianne Strebely, severely injured in a car accident, lay in the operating room of St. Luke's Hospital in Cleveland, awaiting anesthesia. Surrounded by a surgical team, Strebely was hooked up to a computer that monitored her heart rate and brain waves. She was also hooked up, by earphones, to a tape recorder playing Vivaldi's The Four Seasons. During the operation, the surgical team listened to Mozart and Brahms from another tape recorder. "Music reduces staff tension in the operating room," says Dr. Clyde L. Nash, Jr., Strebely's surgeon, "and also relaxes the patient." Nash is one of many physicians around the country who have found that music, used with conventional therapies, can heal the sick. Dr. Mathew H. M. Lee, acting director of the Rusk Rehabilitation Institute at New York University Medical Center, adds, "We've seen confirmation of the benefits of music in helping to avoid serious complications during illness, enhancing patients' well-being, and shortening hospital stays."

How does music help? Some studies show it can regulate blood pressure and respiration rates, thus lessening physiological responses to stress. Other studies suggest music may increase production of endorphins (natural pain relievers) and S-lgA (salivary immunoglobulin A). S-lgA speeds healing, reduces the danger of infection, and controls heart rate. Music therapy is proving especially effective in three key medical areas:

Pain, anxiety, and depression: "When I had my first baby," ,says Susan Koletsky of Shaker Heights, Ohio, "I was in difficult labor for two days. The second time around, I wanted to avoid the pain." Relaxing jazz calmed her in the delivery room; Bach and Beethoven paced her during contractions; finally, the closing movement of Brahms's Symphony No.l energized her while she was giving birth. "The music produced a much easier experience," she claims. The amazing power of music as a way of therapy can also be observed on cancer patients during their bout with the illness. These people often brood in their hospital rooms, refusing to talk with doctors and nurses. "The music therapy helps them to have a positive outlook. This makes it easier for them to communicate and encourages them to cooperate more in their treatment," says Dr. Nathan A. Berger, director of the Ireland Cancer Center at University Hospitals of Cleveland.

Mental, emotional, and physical handicaps: The Ivymount School in Rockville, Illinois, helps youngsters with developmental problems ranging from emotional disturbances to mental retardation, autism, and learning disabilities. Ruthlee Adler, a music therapist for more than 20 years, uses songs and dance to help the children learn and cope. "While the seriously handicapped may ignore other kinds of stimulation, they respond to music," she says.

Neurological disorders: Dr. Oliver Sacks, whose work with sleeping-sickness victims led to the book and movie Awakenings, reports that patients with neurological disorders who cannot talk or move are often able to sing, and sometimes even dance, to music. "The power of music is remarkable in such people," Sacks observes. In a group session for elderly patients at Beth Abraham Hospital in New York City, a 70-year-old stroke victim sat by himself, never speaking. One day, when therapist Connie Tomaino played an old Jewish folk song on her accordion, the man hummed. Tomaino played the tune regularly after that. Finally, the man sang some of the words. "Before you knew it," says Tomaino, "he was talking."

Few people understand the therapeutic powers of music better than Cleveland music therapist Deforia Lane. Ten years ago, during her own struggle with cancer, singing helped her relax and take her mind off the disease. Since then, she has used that experience to help others. "Music is not magic," says the 44-year-old therapist with the warm smile and rich soprano voice. "But in a hospital or at home, for young people or older ones, it can be a potent medicine that helps us all." Of course, music's therapeutic benefits aren't only confined to those who are ill. Apart from the simple enjoyment that music provides, we should see how much it could help us in our daily lives. It is obvious that, during the day, music gives our minds a break as it lets us focus on something else for a few minutes and helps us to cope with daily problems more effectively. To gain the full benefit of music, all we have to do is to work it into our daily schedule.

CULTURE

28 Kwanzaa

Kwanzaa is a modern festival celebrated by African Americans. It comes from traditional African agricultural festivals. In fact, the name 'Kwanzaa' comes from the Swahili word for 'first fruit'. This modern festival started in California in the United States in the 1960s because some black people wanted to celebrate their original history and culture in their new country. Today, black people all over the country take part in this special event as they want their children to value their African-American history. Kwanzaa is not a religious festival, but a festival that celebrates several important ideas or principles—principles like unity, *cooperation* and creativity. The festival lasts for seven days starting on 26 December. People light candles, give gifts, and talk about one special principle each day. On each night there is a dance, and on the final night there is a big feast. That is, people have a large special meal all together.

As Kwanzaa becomes popular, it is also becoming more *commercialized,* a lot of people are making money from this festival. There are now Kwanzaa cards, books on Kwanzaa, Kwanzaa poetry and recipes. Parents are buying more expensive gifts for their children. Now there is also "Nia Umoja', a kind old man, rather like Father Christmas. It was first thought of by the *organizers* in the late 1980s to attract children to the festival.

The festival may at first seem to be held just for fun, but actually the principle of cooperation helps the serious side of Kwanzaa because people collect food and clothes for the poor. Kwanzaa is an interesting balance of African and modern American *influences*.

29 Picking Apples—A New England Tradition

Throughout New England, people know that fall has arrived when the Macintosh apples begin to turn red in the orchards in early September. After the "mac" apples come the Cordands, the Empires, the McCoons, and, finally, the Golden Delicious. All through September and October, the aroma of ripe, fully grown, apples fills the air on sunny days—an invitation to come picking.

A day of apple picking is, in fact, a popular way to spend a fall day in New England. From Connecticut to Maine, it is generally possible to find an orchard within an hour's drive, and the trip is well worth the time. Not only will it provide you with plenty of the freshest apples to be found, but it will also give you a chance to take in some sunshine and autumn scenery and get some exercise. The picking is usually best done by adults. Children should not climb up into trees and risk hurting themselves and damaging the trees—younger members of the family can have fun just romping around the orchard.

The picking may not take long—two hours at most—but many of the orchard owners now offer other kinds of entertainment. At some orchards, you can go for pony rides or ride on a hay-filled wagon. You may be able to watch a horse-show or visit the cows or sheep in the pasture. You may also decide to take a hike and have a picnic along a country lane. Some orchards have set up refreshment stands in their barns where you can taste local products, such as apple cider and homemade baked goods.

A few hints:

1. Call before you go. Check the local newspaper for the names and locations of orchards which offer pick-your-own apples. Then phone to find out their hours, since they may change from one orchard to another.

You should also ask about the rules regarding bags arid containers. Most orchards provide bags, but a few do not, and some will allow only certain types of containers:

2. Check in when you arrive. Before you start picking, you should check with the orchard owner about which varieties are ripe in that period, and which parts of the orchard are open for picking. Respect the owner's privacy, and do not go where you are not allowed!

3. Pick carefully. When you pick the apples, treat them gently. Some orchard owners advise pickers to treat the apples as though they were eggs. If they bruise, they will spoil more quickly. The

technique for picking is simple: hold the apple firmly but not too tightly and twist it off the branch, taking care to leave the stem attached, since removal of the stem will also cause rot.

4. Don't waste apples. Be careful to pick only the apples you need. You may be tempted and pick too many of the delicious looking fruit since you are attracted to it, and then find that the apples go bad before you can eat them. Since the apple season lasts for almost two months, you can always return for another load of apples later.

5. Keep what you pick! Once you take an apple off the tree, you must keep it. It's not fair to the orchard owner to leave apples on the ground where they will quickly spoil.

6. Store your apples properly. Put your apples in the refrigerator as soon as you get home. Studies by the Vermont Department of Agriculture have shown that apples last seven times longer when kept under refrigeration.

If you do pick too many apples to eat in a week or two, you could try freezing them to use later in pies and cakes. Simply peel, core, and slice them, and then put them in airtight plastic bags. They may be kept in the freezer for up to a year.

30 Men in skirts

In Europe men do not wear skirts, but the Scottish national costume for men is a kind of skirt. It is called a 'kilt.' The Scottish are proud of their country and its history, and they feel that the kilt is part of their history. That is why a lot of men still wear kilts at traditional dances and on national holidays. They believe they are wearing the same clothes that Scottish men always wore in the past.

In the early days, Scottish men wore a kind of long shirt that went below their knees. They wore long socks and a big wool blanket around their shoulders. These clothes were warm and comfortable for working outside on a farm, but they were not so good when men started working in factories in the 1730s, so a factory owner changed the blanket into a skirt: the kilt. That was the first kilt.

In the late 1700s, Scottish soldiers in the British Army began to wear kilts. One reason for this was national feeling: The Scottish soldiers wanted to look different from the English soldiers. They fought hard and became famous and in the early 1800s, men all around Scotland began to wear kilts.

The first kilts had colorful stripes going up and down and across. In Scotland, this pattern is called a 'tartan.' Later, the cloth with this pattern was also called tartan. The pattern of all the kilts was the same, but they had different colors which were important to Scottish families. By the early 1800s, most Scottish families had special colors for their kilts and the men always wore these colors on their kilts.

31 Rituals Of Marriage In American Culture

In the US, before a young couple gets married, there are two social rituals which are usually performed before the day of the wedding. For young women, it is the bridal shower and for her prospective husband, it is the stag party.

The bridal shower is the more conservative of the two rituals, with the future bride as the centre of attention. It is customarily organized by her sister or best friend and attended-only by women, usually family and friends. It is usually organized as a surprise party, and the bride doesn't know its time and location until the very last minute. Everyone brings along a gift which will be useful in setting up a home. In recent years, however, it has become an acceptable custom to give a monetary gift sealed in an envelope.

For the future husband, the stag party may contain more excitement and fewer gifts. This will be his last chance to have an all-night party in town with his close friends. Only men are invited to this party, and rightly so, since some of the pleasures of the evening may not be appropriate for a proper woman's taste. In most cases, however, it may be nothing more than a night of bar-hopping and talking about the good times shared with friends in the past.

In addition to bridal showers and stag parties, there are other rituals and traditions concerning marriage in America. For example, the groom must never see his bride in her wedding dress before the ceremony. In some cases, they must not even speak or meet with one another the day before the wedding. Rice throwing at a wedding is also a popular tradition because rice is an ancient symbol of prosperity. Another reason may be the very ancient superstition that at the wedding there are evil spirits which are believed to be flying about the couple. Throwing rice at them could keep these evil spirits busily eating and away from the groom, of whom they are jealous.

32 Aborigines: The Native Australians

The Australian Aborigines came to Australia from Indonesia 50,000 years ago. Scientists think that at one time there was a land bridge between Australia and Asia. They believe that Aborigines traveled south over this bridge. Then there were changes in the Earth and the land between Australia and Asia became islands.

Australia is a difficult land to live in. It has no river systems and it does not rain very much. But the Aborigines learned to live in the desert. They hunted animals and insects for food. In the cold areas, they wore warm clothes made from kangaroo skins. They usually slept outside by a fire with their dogs nearby.

Aborigines were nomads: they went from one place to another. They did not think they owned the land, but they taught their children that they belonged to the land. The Aborigines didn't have a written language. Instead, they had an oral tradition. There were 600 groups, and each spoke its own language.

There were 300,000 Aborigines when white people arrived in Australia. The 'new' Australians began to build and live on tribal lands, and the number of Aboriginal people fell greatly. Today, most Aborigines live in cities and towns or in isolated places.

33 The Shakers

"Shake it up baby. Twist and shout," was sung by Beatles, but it was practised almost two hundred years earlier by a religious group called "The Unified Society of Believers." This religious group, led by Ann Lee, came to America from Manchester, England, in 1774 looking for a place to freely practise their religious belief. Eventually, they became known as "The Shakers" because the believers worshipped by singing, dancing and whirling around.

The Shakers were a peaceful community that welcomed people of all races. They were against war and lived in their own villages separate from the rest of society. They lived communally, that is, sharing their property and working for the common good. The qualities they admired were kindness, generosity, modesty, purity, cleanliness, and love for humanity. Their villages of plain white houses were very neat. Even the roads were swept clean.

The Shakers are probably best known for their celibacy[2] and hard work. Single men and women did not marry. Married couples who joined the Shaker community had to live in separate houses. In the Shaker community, males and females lived and worked separately as Brothers and Sisters. They never shook hands or touched each other in any way. When conversation between a man and a woman was necessary, it was done in the company of others. Males and females sat opposite each other when they came together once a day for conversation and singing. Even when they danced and whirled around during worship, men and women always kept their distance.

As might be expected, the Shaker style of dressing was modest, simple and plain, and their clothes were dark in colour. The women combed their hair back under a cap and wore long dresses with a cloth that covered the chest. Men wore dark pants and simple coats. It was extremely unusual to see these celibate people wearing bright or attractive clothing.

"Put your hands to work and your hearts to God," said Ann Lee to her followers. The Shakers took this seriously and worked very hard. In order to be self-sufficient, the Shakers grew their own food, wove their own cloth and made their own tools, utensils and handicrafts. They made chairs, buttons, tubs, baskets, smoking pipes, pens, brooms, brushes, hats, shoes and hand-woven coats. Although simple and plain, these were of the highest quality.

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[2] celibacy: having no sex, usually because of religious beliefs

Not only were the Shakers industrious, but they were creative and inventive as well. Unlike some other religious groups, the Shakers liked technology and labour saving devices. Their long list of inventions and improvements includes such items as the first garden seeds packaged in paper and machines such as a revolving oven and a wood-burning stove.

Although it may seem that the Shaker life was all rules, work and worship, it was not without joy. They spent pleasant hours picking fruit, walking in the woods, going for carriage rides, and laughing together — in separate groups, of course.

Over the years, the original Shaker community in New York expanded to twenty-four scattered communities among eight states in the eastern US. Many people were attracted to their peaceful ways and clean crime-free villages. Eventually, the Shakers paid the price for their celibacy: they didn't have any children to carry on their traditions and beliefs, and their numbers became fewer. Today, their villages are museums and their handicrafts are items for collectors.

34 Visiting Japan

Visiting Japan can be a very interesting experience. Japan is an unusual mixture of the traditional and ultra-modern. This can be confusing for the visitor because, although it looks quite Western, Japan is still in many ways very Oriental. For example, whenever you go into a house, you must take off your shoes. Sometimes your host will provide you with slippers. If he doesn't, you walk round in your socks. A visitor should also expect, in more traditional houses, hotels, and restaurants, to eat kneeling down on the floor on a cushion in front of a low table. It's a good idea to get used to eating with chopsticks, but, if you can't manage, ask for a knife and fork. The Japanese are extremely polite and hospitable: you can nearly always find someone who speaks English ready to help you.

If you are planning to go to Japan, you should consider the weather. Japan has four distinct seasons. In summer, the country is very hot and humid, so anyone planning a trip then ought to take light, comfortable clothes with them. Winter in Japan is cold, but it's not too bad. If you like skiing, especially, going there in January and February is a good idea. Most people agree that the best time to travel in Japan is early-April or late-October. The temperatures are mild, and there is not too much rain at that time.

The majority of tourists go to Tokyo, but you ought not to miss the chance of visiting the old capital cities of Kyoto and Nara. From Tokyo you can get to Kyoto in three hours on the 'Shinkansen' super-express. If you are driving, it is important to remember that in Japan you have to drive on the left-hand side of the road. To get round the sights, you can hire a bicycle for 250 yen an hour.

For a change from Western-style hotels, you ought to try one of the traditional inns, 'Ryokan.' Instead of a bed, you'll sleep on the floor on a 'futon' mattress and cover spread over the 'tatami' floor mat. To relax at the end of a hard day's touring, you should enjoy a long soak in the 'ofuro'—the traditional Japanese hot bath before trying a delicious Japanese meal.

35 Japanese Culture

Japan is an unusual mixture of traditional and ultra-modern. Although it looks quite western, it is still oriental in many ways.

Lifestyle

A lot of Japanese households consist of both one or more traditional Japanese style rooms with tatami floors and modern rooms that usually have wooden floors. Tatami mats on the floors are made of straw and measure roughly 180 cm x 90 cm. You should always take off your slippers and step on tatami mats only in socks or barefoot in order to protect them from damage. In traditional homes, people sleep on the floor on a "futon" mattress which is laid on the floor only during the night and kept in a closet during the daytime so the bedroom can then also function as a living or dining room. To relax at the end of a hard day, they enjoy a long soak bath in the "ofuro"-the traditional Japanese hot bath, which is usually next to the kitchen.

Food and Eating

In Japan, some restaurants and private houses have Japanese style tables and cushions on the floor. In a traditional Japanese house, a visitor should also expect to eat on the floor on a cushion in front of a low table. The Japanese usually eat with chopsticks but they have knives and forks for visitors. The Japanese say that food must be tasted with the eyes before it is tasted with the mouth. The Japanese cuisine offers a great variety of dishes and regional specialties such as rice dishes, seafood dishes, noodle dishes and soy bean dishes. Rice dishes have until recently been the most important food in the Japanese cuisine. Despite changes in eating patterns over the last decades and slowly decreasing rice consumption in recent years, rice remains one of the most important ingredients in Japan today, and can be found in numerous dishes. Sushi is the most famous Japanese dish outside of Japan, and one of the most popular dishes among the Japanese themselves who usually enjoy sushi on special occasions. The Japanese have a tea ceremony called Sado. It is a ritual way of preparing and drinking tea. The custom has been strongly influenced by Zen Buddhism. Nowadays, the tea ceremony is a relatively popular kind of hobby. Many Japanese, who are interested in their own culture, take tea ceremony lessons with a teacher. Tea ceremonies are held in traditional Japanese rooms in cultural community centers or private houses.

Traditional Japanese dresses

Kimonos are traditional Japanese clothing. Kimonos are made of silk and are usually very expensive. Nowadays, they are worn at formal or traditional occasions, such as funerals, weddings or

tea ceremonies. Kimonos can still sometimes be seen in daily life. Kimonos differ in style and color depending on the occasion on which they are worn and the age and marital status of the person wearing them. To put on a kimono needs some practice. Especially tying the belt (obi) alone is difficult, so many people require assistance. Wearing a kimono properly includes a proper hair style, traditional shoes, socks, and a small handbag for women.

36 Romanies: 1,000 Years on the Road

Gypsies in England have an annual fair where horses are bought and sold. In the first week of June, the larger part of Britain's 75,000 gypsy population gathers at the town of Appleby for the famous horse fair for horse dealing. During this time, silver caravans and trailers arrive at the site — one of the world's very few remaining displays of gypsy culture. Travelers have been coming to Appleby for hundreds of years. References to the fair itself are found as early as 1176 and it is believed that gypsies started to attend it in the 13th century.

Throughout the year, gypsies travel around Britain, working and taking part in other fairs. From Appleby, the gypsies move on to another town, St Boswell's on the Scotish border, and on to Cambridge- shire to pick strawberries there. Then they head for the Stow-on-the-Wold and Barnet fairs. That's it until the next season, which begins with a week of horse racing at Epsom. The Epsom Derby race is the main horse racing event of the gypsy calendar. As the saying goes, "You're not a proper gypsy if you don't go to Epsom."

What makes a gypsy? This has proven to be a very difficult question to answer. It seems that the gypsy people left northern India in the 10th century, gradually working their way westwards and picking up parts of different languages and various cultures along the way. The use of the word "gypsy" as a description for Romany people actually came about by mistake. When these mysterious dark-haired people began arriving in England in the Middle Ages, people assumed that they came from Egypt. Gypsy is a modification of the word Egyptian. The gypsy people are described using the word "Rom", which includes all descendants of the people who left India a thousand years ago. Today, it is believed that there are around 15 million Romanies in the world. Many do not reveal their gypsy roots to avoid the trouble it can bring them. They conceal their language too. In England in the 16th century, the punishment for speaking Romany was death.

Gypsies and non-gypsies often do not trust each other. In fact, gypsy customs are rarely revealed and outsiders are hardly ever accepted into the gypsy communities. Gypsies are nomadic people, who do not lead settled lives, and they claim to be a specific people, a nation among nations. Most people despise gypsies for their lifestyle. However, gypsies are proud of themselves and have maintained their lifestyle of traveling and working, along with their customs and religion through the centuries. They will undoubtedly continue to do so in the future.

37 The Yanomami Of The Amazon

The Yanomami people live in the Amazon forest between Venezuela and Brazil. They live in the tropical forest far away from other people. There are about 20,000 of them in 200 villages. Before scientists visited them, they didn't know anything about other people in South America, about the government, or about modern life. They even did not know whether they lived in Brazil or Venezuela. They lived in their own world.

All of the Yanomami's materials and food came from the forest. There was really no need for clothes so they only wore a few leaves for clothes. The Yanomami people of the Amazon have survived for thousands of years by hunting and fishing in the Amazon River. There wasn't enough area in the forest for farming so they didn't grow any crops at all. They ate bananas and palm fruit and the animals they hunted. As they ate healthy food, they never got ill. They used stone axes and bamboo knives to hunt and catch fish with.

In the late 1940s, scientists started to visit the Yanomami often. They wanted to study them for an unusual reason. The Yanomami are some of the most violent people on earth. They get angry quickly and stay angry for years. They frequently fight and kill each other so there is always a war between villages. Scientists want to know why the Yanomami make war when other groups of people live together and do not make war.

Today the life of the Yanomami is changing very fast. They wear clothes now. They have learnt to eat different kinds of food with salt and fat from visitors that come from the modern world. However, this food is bad for the Yanomami and makes them sick. Every time they get something new, they want more modem things. However, the modern things are killing the Yanomami. In the 1970s, gold was discovered in the area and many modern companies went there for gold. There were about 80,000 miners from big cities in the area by 1987. They worked under the ground to find gold. The miners brought many diseases like hepatitis and tuberculosis, which killed many of the Yanomami people. They also cut down trees in the forest for wood. In 1991, Brazil and Venezuela made the Yanomami land into a park, so that no one could mine for gold or cut trees on this land any more. The Brazilian and Venezuelan governments have also attempted to save the Yanomami in other ways.

38 SURINAME

Suriname, home to a spectrum of native, Asian, African and European cultures struggling to build a common future, is South America's youngest nation. It was founded as a colony by the British in 1650 and then it became Dutch in 1667. Today, Suriname's population of 430,000 is made up of 37% Hindustani, 31% Creole (mixed African and European ancestors), 15% Javenese, 10% Maroon and the rest Indian and Chinese. 90% of the population lives along a narrow strip of fertile land that stretches along the Atlantic coast. Here, people of African and European origins live together with people who have Chinese, Indian and Indonesian origins and Paramaribo, the capital, reflects this diversity. People are tolerant of one another's religion and culture. Mosques and synagogues stand next to Hindu temples. Music is heard everywhere and it's as varied as the people: reggae, Hindi film songs, and Surinamese Afro- pop.

In the early years of their rule, the Dutch were often very harsh to the natives. In more recent years, though, they were so generous that the colony enjoyed £he highest standard of living in South America. Indeed, when Suriname gained its independence from the Netherlands in 1975, 40,000 Surinamers, nearly half the workforce, chose the option of Dutch citizenship. Soon after that, they moved to the Netherlands. This brain-drain made the already bad economy worse, since many who had left were from the professional classes. After 1975, the country experienced a military dictatorship and a civil war, as a result of which the Dutch financial aid was stopped. Suriname was so badly in need of cash that it was considering selling off 40% of its forest to Asian logging companies. However, with the help of Conservation International (CI), the government was convinced that long-term commercial alternatives, like ecotourism, would be much more profitable than selling its forests. Therefore, Suriname and CI announced the creation of the Central Suriname Nature Reserve, a four-million-acre preserved area that covers 10% of the country.

Today, Suriname is known to be a country of rain forests. Because it lacks roads and rails, Suriname's interior, where the Suriname Nature Reserve is located, can only be crossed by airplane. Such areas protect wildlife and offer forest people the promise of income from ecotourism. Nearly 10,000 native Indians live in riverside villages, largely dependent on the forest. These forests are home to 700 bird species and 4,500 plant species. As the country is so rich in plants, the people's knowledge of the medicinal properties of the plants is incalculable.

In the north of Suriname, logging and mining are two important sources of income. Timber and gold attract foreigners with promises of fortune. Logging is tightly controlled, but as a result of illegal mining to smuggle gold to Brazil and French Guiana, much of the habitat has been destroyed.

Today, most Surinamers have realized that they must depend on one another if they want to move forward. In the end, it has become clear to them that the forest is the best alternative for a young nation anxiously in search of itself.

39 Barasana Indians of The Vaupes

The Vaupes region lies near the Equator on the border of Colombia and Brazil; the River Vaupes, rising from close to the Andes, flows east to join the Rio Negro, a tributary of the Amazon. In clearings on the banks of the river live some fifteen thousand Amazonian Indians who make their living by hunting, fishing and agriculture. They are divided into many small groups, each of which speaks its own language. Despite this, all the group languages belong to a common family called Tukanoan. Legends of the Vaupes Indians suggest they came from the East, but some carvings on the rocks indicate that they have been in the region for a long time.

The Barasana, who are the most well-known group of Amazonian Indians, have no villages; instead, small groups of people live in malocas (communal houses), each one separated from its neighbors by about an hour's journey. People in nearby malocas often visit each other to attend dances and wedding ceremonies. More distant people are rarely visited and often regarded with suspicion. Indians prefer to build malocas close to the bigger rivers where fishing is good and travel is easy. From the air, the large gardens, or chagras, around the malocas look like light green holes in the forest. Each maloca is surrounded by a cleared space or plaza. Behind the house are smaller gardens for special plants used for medicines and drugs, peppers for cooking and tobacco. Banana trees around the plaza provide fruit and their leaves are used for serving food.

The lives of Barasana men and women are sharply divided. Inside the maloca they use different doors and carry out their separate tasks in different areas. Outside, women work in the gardens, and men in the forest and on the rivers. The world of women revolves round the care of children, growing crops and manioc, a type of plant with large roots. The process required to turn manioc into food is lengthy and time-consuming, but the root does produce a good crop in poor soil, and many different foods can be made from it.

Though the groups have names like the Tukano, Cubeo, Desena, and Barasana, they are not really independent tribes; they share a common culture and a way of life because each group intermarries with its neighbors. Children are taught to speak their father's language but they know their mother's perfectly, too. Adults always speak in their own language but as they also know up to five others, they have no difficulty in understanding each other. On marriage a young man builds himself a compartment inside the maloca. When his wife has a child, he must stay with her in the compartment for ten days, fasting and avoiding work. When children reach the age of 5, they spend much of their time playing with other children of the maloca. Older children, especially older sisters, are expected to look after younger ones. Children do not go to school but learn by playing together, watching their parents and

working with them. By the time they are six, young girls begin to help their mothers. Compared to girls, boys are freer. They swim in the rivers and practice hunting with miniature bows and arrows, or blowpipes. Later they begin to hunt and fish more seriously, bringing small birds and fish to their mothers to cook. Women often go with their husbands and children to visit their parents and brothers in neighboring malocas; their husbands usually take along gifts of food or baskets to give to their in-laws. At sunrise and dusk men sit out in the plaza talking with their wives and playing with their children, a family time that contrasts with their separation for the rest of the day.

The Indians' religion is based on myths or stories about the beginning of time which they believe to be true. They say that the sun made the world in the form of a big maloca. In the beginning there were no people. The first ancestors, the sun's children, came into the world through the front door in the east, and swam up river in the form of anacondas, giant water snakes. As they traveled, they stopped at the rapids on the way to dance and sing. Carved on the rocks in the rivers there are strange figures and patterns, said to have been left there by the first people. When they got to the Vaupes region, the anacondas turned into people. Each anaconda made people of a different language.

40 The Mohana

The Mohana fishermen of central Pakistan are one of the oldest societies in human history. They lead a life that has not altered 'for 5,000 years. They live in houseboats that are attached to each other by ropes to form floating villages on the banks of the River Indus in the region of Sind. Few other living creatures survive there. The climate is unpredictable and travelling down the river is too dangerous. The Mohana live as they have always lived: each person's role in the society is determined. There are three castes, which are determined by the traditional river trades: fishing, boat building and ferrying. The fishermen, or the *shikari*, are the most unusual. They fish in the shallow waters along the sides of the river for catfish and turtles. This is no easy task: the alluvial currents make it almost impossible to locate the fish. The solution is to use herons, a kind of large bird.

Herons have oils on the surface of their eyes that function as colour filters. These enable them to detect fish below the surface of the water, which they then dive for and catch. However, a trained heron will stand still above the fish instead of diving. 'The fisherman approaches the heron in a boat, jumps into the water and traps the fish in a net known as the *kulari*. The Mohana have never kept herons in captivity. There are so many in the region that it is not necessary. Instead, they train fully-grown specimens. The idea of training herons may seem impossible to Europeans, but for the Mohana, this is a part of everyday life.

Despite their skills, the *shikari*, who make up nearly two-thirds of the Mohana people, are the lowest in rank among the three castes. Above them are the *kurnangar*, or carpenters, who build both the rowing boats and the houseboats in which the Mohana live. The highest caste of all is the *mirbamar*, who ferry, or carry, cargoes by boat to the northern and southern parts of Sind. They are the smallest caste but own most of the community's wealth.

Despite their long his ton,-, all these castes face a similar fate now: extinction. In other words, they probably won't be able to survive the 21st century. On one side, they are threatened by problems as old as their own traditions. They have to pay about half of their incomes to their feudal lords, the 3arnidar; who own the banks of the river. The rest of their income is often taken by armed robbers from the jungles of northern Sind. On the other side, they face modern dangers. Seven dams that have recently been constructed between the Punjab and southern Sind have closed trading routes for the *mirbamar* and killed many of the fish on which the *shikari* depend. Moreover, the Mohana do not have enough contact with other Pakistanis to survive in the 21s' century. They make no contribution to the country's economy as they are illiterate and nomadic. What's more, the rest of the population, most of whom are

Muslim, do not approve of the Mohana's religious beliefs. It seems that although the Mohana civilisation has survived for 5,000 years, it will not last another twenty years.

41 The Qualities We Prize In Our Children

A recent international study has shown some surprising and apparently contradictory results on the question of the priorities parents around the world have when raising their children. While the survey shows that some virtues are universally prized, interesting regional and national trends emerge when parents are asked to rate the importance of various qualities they wish to instill in their children.

Parents around the world seem to agree that good manners, a sense of responsibility, and respect for others are important qualities to teach their children. However, while West Europeans give all three qualities more or less equal importance, East Europeans and North Americans rate a sense of responsibility as by far the most important, and relegate respect for others to third place.

Interestingly, a sense of imagination ranks the lowest *priority* worldwide, although West Europeans give the quality of *flexible* thinking twice the importance any other group does. The Italians stress the virtue of cultivating their youngsters' imagination more than most others surveyed, with the exception of Switzerland. The supposedly staid Swiss prize imaginative youth.

Etiquette-minded Belgians, Spaniards, and Greeks place the highest premium on politeness, while the Danes and Swedes put good manners lowest on the list. The newly-capitalist Eastern Bloc countries also rate good manners as relatively unimportant, perhaps because they are being confronted, or faced with, commercial competition for the first time. Together with the Swiss and the Turks, on the other hand, they prize the ability to communicate with others.

The virtues of tolerance and respect for others are most highly *regarded* in Scandinavia, France, Britain, Switzerland, the Netherlands, and Spain. This is not the case in Greece and the *former* Eastern Bloc nations, which rate these as being of lesser importance.

Germans, Austrians, and Swedes esteem personal independence, but the industrious French hold the quality of conscientiousness at work, that is, doing their work carefully and properly, more dear than any other European nationals. The *responses* in the industrialized nations of Sweden and Britain show, perhaps bewilderingly, that those nations give little importance to conscientiousness at work.

As for the qualities concerning obedience and religious beliefs, the results are also interesting. To start with, polite Belgians answered that for them, obedience is among their paramount values; this sentiment is shared to a lesser degree by the British, Greeks, and Irish. The Italians, according to their questionnaires, rank this very low. Second, when rearing their children, the Greeks, Turks, and Irish are alone in their emphasis on instilling strong religious beliefs.

One of the *primary* difficulties the researchers faced was translating the questions as perfectly as possible in order not to distort, or misrepresent, the results. "Imagination," for example, can be translated into Dutch as "conceitedness"; perhaps this explains why the Dutch appeared to give imagination a low priority.

The researchers also discovered that some qualities are so ingrained in certain cultures that they are taken for granted — in other words, they are believed to be true without being questioned — while others are given great emphasis because they are felt to be lacking in a particular society.

SPACE & ASTRONOMY

42 Comets

Comets are just as much members of the Sun's family as are the major and minor planets. There can be very few people who have not heard of Halley's Comet, but there are still a great many who have no real idea of what a comet is. The most popular mistake is to assume that a comet moves quickly across the sky, disappearing in a few seconds. In fact, all comets are very distant and they do not move perceptibly against a starry background. If you see an object moving visibly, it most probably is not a comet because most comets are extremely faint objects, far beyond the limits of the naked eye.

Although comets are members of the solar system, they are quite unlike planets. They are not solid or rocky. A large comet consists of an icy central part called the nucleus, a head, and a tail, or tails made of tiny particles of 'dust'. Though comets may be immense — the head of the Great Comet of 1843 was larger than the Sun — they are very flimsy. Even a direct collision between the Earth and a comet would cause no more than a local damage.

Comets move around the Sun, and with one exception — Halley's — all the really bright comets take hundreds, thousands or even millions of years to complete one orbit. This means that we cannot predict them, and they are always liable to take us by surprise. Comets usually arouse public interest when they are large and bright enough to attract attention and receive mention in the newspapers, but objects of this type do not appear frequently and have been particularly rare during the present century.

There are many short-period comets which reappear only after a few years but these are faint, and usually remain well beyond naked-eye visibility. Moreover, they usually lack tails and appear as nothing more than tiny patches of light. Haley's Comet is in a class of its own. It has a period of 76 years, and it has been seen regularly since well before the time of Christ.

43 The Milky Way

On dark, clear nights we can sometimes see a creamy strip running across the sky. This is *Milky Way*, the galaxy in which we live. A myth of the ancient Greeks said this long whit mark was a "river of milk". The ancient Romans called it the *Via Galactica*, or "road made of milk". This is how our galaxy became known as the Milky Way. Until the invention of the telescope, nobody really knew what the "Milky Way" was. About 300 years ago, telescope showed a very surprising fact: the Milky Way was made of stars. Only 70 years ago, more powerful telescopes brought the further revelation that the Milky Way is only one galaxy among many, the 1920s, an American astronomer, Harlow Shapley, was the first to realize that our sola system is not at the centre of the Milky Way.

The Milky Way contains about two hundred billion stars and countless other objects. The size of our galaxy is huge; light would take about 100,000 years to cross it. Like other spiral galaxies, the Milky Way has three main components: a bulge, a halo and a disk. Although all: parts of the same galaxy, each contains different objects. The halo and central bulge contain! old stars and the disk is filled with gas, dust, and young stars. Our Sun is one of these fairly! young stars.

Our Sun is about 5 billion years old; however, the Milky Way is at least 5 billion years older j than that. Our Sun is located roughly 24,000 light years from the center of the Milky Way. The '! Sun is revolving around the center of the Galaxy at a speed of half a million miles per hour. Therefore, our solar system must have made only 20 or so orbits around the Milky Way since the Sun began to shine.

44 The Origins Of The Moon

For thousands of years, people have looked up at the night sky and watched the moon. They wondered what the moon was made of. They also wanted to know how big it was and how far away it was. One of the most interesting questions was "Where did the moon come from?" No one knew for sure. Scientists developed many different theories, but they could not prove any of these.

Then, between 1969 and 1972, the United States sent astronauts to the moon. They studied the moon and returned to the Earth with rock samples. Scientists have studied these pieces of rock, die moon's movements, and information about the moon and the Earth. They can finally answer some questions about the origin of the moon, which was impossible before the trips to the moon.

Today most scientists believe that the moon was formed from the Earth. They think that a large object, perhaps as big as Mars, hit the Earth early in its history. When the object hit the Earth, huge pieces of the Earth broke off because of this great impact. These pieces went into orbit around the Earth. After a short time, the pieces came together and formed the moon.

This 'impact theory' explains many facts about the Earth and the moon. For example, the moon is very dry because the impact created so much heat that it dried up all the water. The Earth has iron in its center. However, the moon has very little iron in its center. This is because the moon formed from lighter materials that make up the outer part of the Earth.

No one can prove something that happened billions of years ago. In the future, new information will either support this theory or show that it is wrong. For now, scientists accept the impact theory because it explains what we know today about the Earth and the moon.

45 The Moon

The Moon is the only natural satellite of the Earth. It was first visited by the Soviet spacecraft Luna 2 in 1959. It is the only extraterrestrial body which humans have visited. The first manned landing on the Moon was on July 20, 1969; the last was in December, 1972. The Moon is also the only body from which astronauts have brought back samples to Earth. In the summer of 1994, the Moon was mapped in detail by the little spacecraft Clementine, and again in 1999 by Lunar Prospector.

The gravitational forces between the Earth and the Moon have some interesting effects. The most obvious is the tides. The Moon's gravitational attraction is stronger on the side of the Earth nearest to it and weaker on the opposite side. Since the Earth is not perfectly rigid, i.e. fixed and inflexible, it is stretched out toward the Moon. This results in two small bulges on the Earth's surface, one in the direction of the Moon and one directly opposite. The effect is much stronger in the ocean water than in the solid crust, so the water bulges are higher. And because the Earth rotates much faster than the Moon moves in its orbit, the bulges move around the Earth about once a day creating two high tides in oceans and lakes.

The Moon appears to turn slightly (due to its slightly non-circular orbit) so we can see a few degrees of the far side from time to time. The majority of the far side was completely unknown until the Soviet spacecraft Luna 3 photographed it in 1959. Actually, there is no "dark side" of the Moon; other than a few areas with deep craters near the poles, all parts of the Moon get sunlight half the time.

There are basically two types of terrain, or land, on the Moon: the heavily cratered and very old highlands, and, opposite them, the relatively smooth and younger maria. Most of the surface of the cratered highlands is covered with regolith, a mixture of fine dust and small rocks produced by meteor crashes. For some unknown reason, the maria are concentrated on the near side. The maria (which cover about 16% of the Moon's surface) are huge craters that were later filled with lava.

A total of 382 kg of rock samples were returned to the Earth by the Apollo and Luna programs. These provide most of our knowledge of the Moon. They are particularly valuable because they can be dated. Even today, 30 years after the last Moon landing, scientists still study these precious samples. Most rocks on the surface of the Moon seem to be between 4.6 and 3 billion years old. Thus, the Moon provides certain evidence about the early history of the solar system which is not fully available on the Earth.

Before the study of the Apollo, Luna 2 and Luna 3 samples, there was no agreement among scientists about the origin of the Moon. There were three principal theories: co-accretion, which said

that the Moon and the Earth formed at the same time from the Solar Nebula; fission, which claimed that the Moon was formerly a part of the Earth; and capture, which held that the Moon formed somewhere else and was later captured by the Earth's gravitational field. None of these is very reasonable. The new and detailed information from the Moon rocks led to the impact theory: that the Earth crashed into a very large object (as big as Mars or more) and that the Moon formed from the discharged material. There are still details that scientists are working on, but the impact theory is now widely accepted.

46 Venus

Venus is one of the most unusual planets in our solar system. It is the second planet from the Sun, located in between Mercury and Earth. The Orbit, or path, Venus follows around the Sun is circular, and the planet's distance from the Sun is about 65 million miles. As Venus is closer to the Sun than Earth, a Venusian year is just 225 Earth-days. Venus rotates around itself much more slowly than Earth, so a day on Venus is 243 Earth-days. This means that a day on Venus is longer than its year! Even more strange is the fact that Venus rotates from East to West. This is just the opposite of Earth and most of the other planets.

Venus is the brightest object in the sky after the Sun and the moon. It is visible to the naked eye for several months. As Venus appears both in the morning sky and the evening sky, ancient astronomers thought it was two different objects and called it Eosphorus and Hesperus.

Venus is similar to Earth in some ways. Venus is almost the same size as Earth, with a diameter of a little over 7,200 miles. Both have craters on their surfaces. Their densities and chemical compositions are similar. Venus probably once had large amounts of water like Earth, but it all boiled away so Venus is quite dry now. Because of these similarities, scientists thought that below its dense clouds Venus might be like the Earth and there might even be life on it. However, more detailed study of Venus showed that in many ways it is different from the Earth.

The atmosphere of Venus is about 90 times heavier than the Earth's atmosphere. It consists mainly of carbon dioxide (96%). 3.5% of the atmosphere is nitrogen and less than 1% is made up of carbon monoxide, argon, sulfur dioxide and water vapor. There are also several layers of clouds that cover the planet. These clouds are many kilometers thick and they are made of sulfuric acid, which is an extremely dangerous substance. These clouds obscure our view of the surface of Venus. In other words, we can't see the surface of Venus from the Earth. There are strong winds at the cloud tops, averaging around 350 kilometers per hour, but the winds on the surface are very light, no more than a few kilometers per hour.

A lot of information about Venus comes from spacecraft that study the planet from a safe distance. They cannot get very close to the planet because of the high temperature. The density of the atmosphere of Venus leads to an increase in the surface temperature and makes the planet one of the hottest places in the solar system. The temperature on Venus reaches 450°C, which is very hot and can melt most metals; that is, the high temperature can turn most metals into liquid. For this reason, scientists are looking for a different way of collecting information about Venus from Earth. A few years

ago, they made a map of the planet's surface using radar telescopes here on Earth. They found that Venus' surface has many mountains (some higher than Mount Everest) and volcanoes. There are also large flat lands called plains on its surface.

47 Nasa Listens For Space Aliens

The idea that "We are not alone in the universe" and movies like E.T or Star Wars have always fascinated people, though in reality, most people don't believe life on other planets exists. However, NASA assumes there's a good chance that we're not alone in the universe. Last fall, NASA began a new project called the High Resolution Microwave Survey (HRMS), whose purpose is to find evidence of life in one of the billions of galaxies in the universe

The search for intelligent life on other planets isn't new. In fact, it began in the early 1900s. Scientists built a huge transmitter to beam radio waves into space then. They thought intelligent beings on other planets might pick up the signals. Recently, scientists have also sent a message about humans and our solar system to a nearby constellation. However, as the constellation is 25,000 light years away, a return message won't reach Earth for 50,000 years, so don't expect an answer for now!

So far, no ETs (extraterrestrial beings) that we know of have returned our "calls", but according to Dr. Jill Tarter, who is an HRMS scientist, we haven't exactly had our ears wide open. "Now, however," says Dr. Tarter, "we've built the technological tools we need to listen well." Last October, Dr. Tarter turned on the largest radio receiver in the world. It's a huge metal bowl stretching 1,000 feet across a canyon in the jungles of Puerto Rico.

Meanwhile, another NASA scientist flipped on a huge radio antenna in California's Mojave Desert, where NASA hopes to pick up radio signals from other worlds. Dr. Frank Drake has been searching for life in outer space for years. He explains the HRMS project this way: To listen to your radio, you move the tuner on the dial until the channels come in loud and clear. Now imagine radio receivers that scan our galaxy listening to 14 million channels every second. That's what NASA's radio telescopes in Puerto Rico and California are doing.

However, that's not all. Powerful computers in the telescopes carefully examine ever)- signal. They try to match the signals to the ones that scientists already recognize, such as human- made signals. If they can't, Drake and Tarter check on them. "It could prove there is radio technology elsewhere in the universe," says Dr. Tarter. "And that would mean we're not alone." "Whenever I look up at the stars," Dr. Tarter adds, "it seems ridiculous to think we are alone." After all, she reasons, there are billions of galaxies like our own and each has hundreds of billions of stars like our sun. As each sun might also have planets, it's very likely that some of those planets support life as Earth does, and she believes that some of that life could be intelligent.

That leads right to the next big question: If there are intelligent ETs out there, are they trying to reach us? There's no way to know for sure, but according to Dr. Tarter, it might not matter. "If they have the technology, their signals may reach us, just as our TV signals may reach them." Dr. Drake is also confident. "I fully expect to find signals from an extraterrestrial before the year 2010. However, we have to be cautious when revealing our research findings as any misunderstanding may create a panicky situation. Therefore we have arrived at a decision: We are not going to immediately announce the results of the studies that might show the existence of space aliens to the public." he says. However, not all scientists are that certain of discovering life in other galaxies, but who knows? If Dr. Drake is correct, the year 2010 just might bring us a group of new space neighbors!

48 Mission To Mars

Astronomers all over the world were waiting in excitement as August 1993 approached. Mars Observer, the American spacecraft, was scheduled to move into orbit around Mars and begin sending new information back to Earth. In addition to mapping the planet, Mars Observes was going to study the Martian atmosphere and surface. Unfortunately, no information] reached the Earth as scientists lost contact with Mars Observer on August 24. The Mars Observer mission, which cost $845 million, failed.

Unlike Mars Observer, the United States' previous mission to Mars was successful. In 1976 two American spacecraft, the Viking landers, landed on Mars to search for life. They| performed four experiments. Three experiments tested for biological activity in the soil. The fourth experiment looked for evidence of life, dead or alive. The results of the Viking landers' tests were negative. However, scientists were dissatisfied with the Viking mission and still had questions about our close neighbor in space. The two sites where the spacecraft had landed j provided safe landing places, but they were not particularly interesting locations. Scientists believe there are other areas on Mars that are similar to specific places on Earth that support life. For example, an area in Antarctica, southern Victoria Land, which is not covered by ice, resembles an area on Mars. In the dry valleys of southern Victoria Land, although the temperature averages below zero, biologists have found simple life forms (microorganisms) in rocks and frozen lakes. Perhaps this is also true of some places on Mars.

Scientists' interest in Mars is based on a theory. They believe that 4.5 billion years ago, Mars and Earth began their existence under similar conditions. During the first billion years, liquid water was abundant (plentiful) on the surface of Mars. This shows that Mars was much warmer at that time. Mars also had a thicker atmosphere of carbon dioxide (C02). Many scientists think it is possible that life began on Mars under these favorable conditions. After all, Earth had the same positive conditions during its first billion years, when life began. At some point in time, Earth developed an atmosphere that is rich in oxygen, and an ozone layer. It also survived and became more complex. Mars, however, lost its thick atmosphere of carbon dioxide and ultraviolet radiation increased. The planet eventually grew colder, and its water froze.

A biologist at NASA, Chris McKay, has suggested three theories about life on Mars. One theory is that life never developed there. A second theory is that life started on Mars just as it did on Earth and survived for at least a billion years. The third is that life began on Mars and simple organisms developed. When environmental conditions on Mars changed, life ended.

Scientists want to map the surface of the planet and land a spacecraft in a better location. They want to investigate further the possibility of life on Mars. They want to search for fossils, the ancient remains of life. If life ever existed on Mars, scientists believe that future missions might find records of it under sand, or in the ice.

49 Life On Mars?

Many years ago, there was a newspaperman who was writing a story about the planet Mars. He needed scientific information, so he sent the following telegram to a well-known astronomer: "TELEGRAPH IMMEDIATELY FIVE HUNDRED WORDS ON WHETHER THERE IS LIFE ON MARS." The astronomer quickly replied: "NOBODY KNOWS, NOBODY KNOWS, NOBODY KNOWS..." 250 times.

Our ability to get information about Mars and the other planets in our solar system is much better today. We have sent people and machines into space. We have analyzed the "earth" and "air" of all the planets in our solar system through one means or another. Many of the scientists who have studied the information we have got about Mars continue to think that there may be life on the red planet.

There are nine planets in our solar system: the four smaller inner planets with solid surfaces: Mercury, Venus, Earth and Mars; the four gas giants further from the Sun: Jupiter, Saturn, Uranus, and Neptune, and the icy planet of Pluto, which is the smallest of the nine and is also the farthest from the Sun. Of these nine planets that orbit the Sun, we know for sure of only one planet with life on it: that planet, of course, is the Earth. Why, with seven other planets to choose from, does Mars receive so much attention? There are two basic reasons: one is its form; the other is its chemistry.

In many ways, Mars looks like the Earth. It is solid and about the same size. On Mars, there are large rocks and boulders; and there are huge volcanoes, much larger than the largest volcano in Hawaii. There are polar ice caps on Mars that look a lot like our North and South Poles, and there are also drifting white clouds in its sky like the ones moving slowly in the sky of the Earth. A Martian day is the same length of time as an Earth day. Mars makes a complete revolution in 24 hours. Some of the other planets turn more slowly than the Earth. Venus, for example, turns so slowly that one day there takes about 118 Earth days. Jupiter, on the other hand, turns more quickly than the Earth. It only takes 10 hours for it to complete its day.

If the form of a planet is a lot different from ours but the chemistry is similar, there may still be life on that planet. Jupiter is such a planet. It is the largest of all nine planets and it could contain more than a thousand Earths within it. It does not have a solid surface with mountains and valleys the way the Earth and Mars do; it has instead a vast, i.e., very big, ocean of boiling liquids and gases. Jupiter doesn't look a lot like the Earth but the bright colors of the planet, and thousands of scientific studies about it tell us that there are very- active chemicals on Jupiter. These chemicals are the same as the

ones that formed life on Earth long ago. If some form of life could find a way to live at a distance from its hot surface— maybe floating in its sky — there could be life on Jupiter.

Although our imaginations and our scientific minds take us here and there throughout the solar system, we turn again to Mars. Mars looks like the Earth. Its chemistry is also similar to that of the Earth. Its air contains a lot of carbon dioxide, a little water in a form between liquid and gas, and oxygen. There is also a small amount of ozone (a kind of gas that protects human beings from the Sun's harsh rays). However, there is not enough water, oxygen or ozone for human beings to live on Mars. The question is: could any organisms survive, or live, in such conditions?

To test this question, scientists prepared a place that was chemically like Mars, and then they put tiny Earth organisms in it. Some of these very small organisms were able to survive. In another experiment, they added a tiny amount of water, and some of the organisms actually grew. If Earth organisms can live in Martian conditions, maybe there are Martian organisms living somewhere on the red planet. Scientists believe that if there are such organisms, they should be found near water, so they are looking near the ice caps for signs of life.

50 Space Wardrobe

There is no atmosphere to supply the pressure and oxygen necessary to support life in space. This forces humans to take their environment with them to be able to explore and work there. Without enough atmospheric pressure, body fluids will start to heat up and boil, and without oxygen, we will be unable to breathe.

Spacesuits serve many functions. Today's spacesuits are pressurized, have an oxygen supply, protect the astronaut from micrometeoroid bombardment while spacewalking, and insulate the astronaut from the severe temperature changes experienced in space. The Space Shuttle astronauts have more than one "outfit" for space travel. What they wear while on a mission is determined by the job they are doing. During the launch and re-entry, the astronauts wear a partially-pressurized suit and a parachute pack. The suit has a helmet, gloves, and boots which all serve as protection for the astronaut. Within the suit, there are bags that automatically fill with air at reduced cabin pressures. At low pressure, the blood will accumulate in the lower body causing the astronaut to lose consciousness. The bags maintain the pressure on the lower body to prevent this from happening. While working in the Shuttle during orbit, astronauts work in comfortable clothes such as knit shirts, pants, or flight suits. In addition, before each duty, the flight crew is provided with lined jackets, sleep shorts, slippers, and underwear.

While working outside the Shuttle during a mission, astronauts wear an extravehicular mobility-unit (EMU). This suit has interchangeable parts so it can be assembled to fit different astronauts. This makes the suit more cost-effective since it can be reused. The EMU has a liquid cooling garment, which is a one-piece suit made of spandex, and keeps the astronaut cool while in the suit. The unit also contains headphones and microphones, a drink bag which carries water, a life support system containing oxygen, and a urine collection device. Gloves are included with the unit along with a helmet and a visor. All of these are necessary to protect the astronaut from micrometeoroids, solar radiation, infrared radiation, temperature changes, pressure changes, and oxygen deprivation.

To help the astronaut get around freely while performing a spacewalk, a manned-maneuvering unit (MMU) can be joined to the EMU. The MMU is a nitrogen propelled backpack that allows the astronaut to fly with precision. The MMU has a 35mm camera attached to it so that the astronaut can take pictures while in flight-

51 History Of Astronomy

People have been struggling to understand the universe since ancient times. Thales, who is the father of Greek science and mathematics, asked questions about the Universe that were not based on the actions of gods or demons. He provided the bridge between the world of myth and the world of reason. He used the astronomical records of the Babylonians and Egyptians to correctly predict a solar eclipse in the sixth century BC. Thales believed the Earth was flat and floated on water like a log, i.e., a piece of wood.

Aristotle, who lived from 384 to 322 BC, believed the Earth was round. He thought the Earth was the center of the Universe and that the Sun, Moon, other planets, and all the fixed stars revolved around it. Aristotle's ideas were widely accepted by the Greeks of his time. The exception, a century later, was Aristarchus, one of the earliest believers in a heliocentric system. In other words, he believed that the Universe was sun-centered

The first astronomer to make truly scientific maps of the heavens, Claudius Ptolemaeus, came along 300 years later. Like most astronomers before him, he believed the Sun, Moon, and other planets circled the Earth. He thought that each body in the space moved in an epicycle. In other words, each body in the space moved in a small circle which moved around a larger circle. This explained why planets sometimes appeared to travel backward in the sky. The Earth-centered view of the Universe was widely accepted for about 1500 years. It was not seriously challenged, until 1543, when the Polish monk Nicolaus Copernicus suggested that the Sun was at the center of the Universe. However, this idea was not accepted by the Church. The two events most responsible for the eventual acceptance of Copernicus's views were Tycho Brahe's precise observations of the sky and Galileo's use of the telescope

One night in 1572, Danish astronomer Tycho Brahe saw what he thought was a brilliant new star in the constellation Cassiopeia, a supernova. In 1604, a second one was observed. These discoveries caused scientists to seriously question Ptolemy's theory that the outer sphere of the Universe contained all the stars.

In 1609, Italian scientist Galileo Galilei heard about the invention of a "*spyglass.*" He made one for himself and turned it on the heavens. One of his first discoveries was four moons circling the planet Jupiter. Galileo's telescope revealed, or showed, a miniature version of Copernicus's solar system, with the moons moving around the planet in simple, circular orbits. Galileo's discoveries forever changed the face of astronomy.

The beginnings of modern astronomy can be attributed to Galileo and the British genius Isaac Newton. Newton was born in the same year that Galileo died. Isaac Newton took the known facts and used mathematics to explain them. He developed mathematical laws that explained how objects move on Earth as well as in space. He reasoned that everything in space is constantly moving, with no limits on space or time.

In 1917, Albert Einstein proposed a description of the Universe based on his Theory of General Relativity. Einstein's theory inspired many other scientists such as Friedmann, who built on the General Relativity equations to develop models that helped explain the evolution of the Universe.

52 History Of Space Travel

The Earth has been the home of mankind for centuries. However, one cannot remain at home forever. After living on Earth for centuries, some people decided that it was time for them to explore life outside the Earth. To do this, they had to design a spacecraft. The theory of space flight was studied by many brilliant men over a period of nearly three centuries — from 1600 to 1900.

Johannes Kepler was the German mathematician who, in 1609, worked out the equations for orbiting planets and their satellites. His belief was that the planets moved in ellipses (flattened circles), not in true circles. In 1687, Isaac Newton wrote what is probably the single greatest intellectual achievement of all time. In a single book, he established the basic laws of force, motion, and gravitation and this enabled him to invent a new branch of mathematics, calculus. He did all this to show how the force of gravity is the reason that the planets' orbits follow Kepler's equations.

Konstantin Tsiolkovsky, a Russian school teacher, was the first to figure out all the basic equations for rocketry in 1903, without ever launching a single rocket himself! From his extensive reading, including Jules Verne, he concluded that space travel was a possibility, and that it was, in fact, man's destiny. He anticipated and solved many of the problems that were going to come up for rocket-powered flight and drew up several rocket designs. He determined that liquid fuel rockets would be needed to get to space and that the rockets would need to be built in stages. He concluded that oxygen and hydrogen would be the most powerful fuels for these rockets to use. He imagined 65 years earlier how the Saturn V rocket would operate for the first landing of men on the moon.

Robert Goddard, an American who is now called "the father of modern rocketry," was the man who designed, built, and flew the rockets. He was a university professor who also reached the same conclusions as Tsiolkovsky did. Goddard proved that the theory was true. He was also heavily influenced by the science fiction of Jules Verne, and he worked hard to develop rockets because he wanted to see them take us into space. When he first published his study, he proposed that it could be possible to use rockets to travel to the moon, and people thought he was crazy. In fact, the criticism was so strong that Goddard said little about his work after that.

In 1926, Goddard launched the world's first liquid-fueled rocket. In the course of his experiments in New Mexico, he virtually developed rocket technology. He invented everything required for modern rocketry and earned over 200 patents. By himself he developed the same components and designs that took the Germans hundreds of scientists and engineers and millions of dollars to develop independently at Peenemunde during World War II. Hermann Oberth was another man who, after reading Jules

Verne's "From Earth to the Moon," became determined to find a way to travel to space. He independently determined the same rocketry principles as Tsiolkovsky and Goddard. The difference with Oberth is that he made the world believe that the rocket was something to take seriously as a space vehicle. Oberth was the only one who lived to see men travel through space and land on the moon. If he hadn't been so successful, we may never have made it to the moon.

FOOD & HEALTH

53 Corn

Corn grew naturally in both North and South America. Indians started planting it in gardens at least 5,000 years ago. The word corn means "our life" in their language. Some Indians ground their corn into flour and made corn bread. Columbus took corn to Europe and from there it spread to other continents.

Today corn is the second most plentiful grain in the world after rice. Farmers use corn to feed animals. However, corn is mostly used in the food industry as breakfast cereals, flour, starch and oil. It is also used as a sweetener in soft drinks. In addition to the farming and food industries, corn is used to make paper, paints, industrial alcohol and automobile fuel.

Nutritionally, corn is low in fat and calories. It contains 354 calories per 100 grams. It is rich in starch, lipids, proteins and carbohydrates. White com does not have Vitamin A, but yellow corn contains a lot of Vitamin A. Both have some folacin, Vitamin C, lots of magnesium and potassium. Neither type contains niacin. Therefore, if corn makes up a large proportion of the diet, it might lead to pellagra, a disease caused by lack of niacin. Patients with pellagra have problems in their digestive and nervous systems. On the other hand, if sweetcorn is eaten cooked, it greatly reduces the chance of heart disease and cancer.

Corn seeds are planted from May until the end of June. The corn plant requires direct sunlight for at least eight hours a day to grow at its best. It takes 60 to 100 days for the grains to fully develop. As corn starts losing its sugar as soon as it is picked, storing it at the right temperature is very important.

54 All You Want To Learn About Corn

Com is a plant which does not exist naturally in the wild. It can only survive if people plant this crop in their fields. It can be said that today corn still exists because it has been cultivated by farmers . In other words, people grew this crop in their fields.

The history of corn goes back to thousands of years ago. Scientists believe corn was originally grown by Indians of Central and South America at least 7,000 years ago. The Indians discovered that corn was good to eat and very nutritious. Their diet depended on this crop because it was an important source of food. They learned to use almost every part of the corn plant. They even used the leaves, which contain a large amount of sugar, as the first "chewing gum". They ate immature corn as a fresh vegetable, but once the kernels of corn became fully grown, they used it to make flour. By the time Christopher Columbus reached the New World in 1492, corn was grown in an area from southern Canada to the Andes Mountains of South America. When Columbus discovered America, he also discovered com. Up to this time, people living in Europe didn't know about com. Columbus and the explorers that followed him took corn back to Europe and introduced it to the world.

Corn is a member of the grass family of plants. It was started from a kind of wild grass called teosinte. Today's corn plant is much more different than its ancient ancestor, teosinte. It is much taller and produces a much larger ear. An ear of corn averages 12-14 inches in length and can produce about 800 new kernels. Each kernel can produce a plant which has one or more ears.

As a crop, corn controls American agriculture more than any other. Corn is planted on roughly 70-80 million US acres[3] with an annual production of about 9 billion bushels. Bushel is a term which is used to measure corn production. It is equal to 56 pounds of kernels which are removed from the cob. A single bushel of corn contains about 73,000 kernels.

Today there are many types of corn. The most common ones are flint corn, dent corn, sweet corn and, of course, popcorn. Flint corn, which is also known as Indian corn, has a hard outer shell and kernels with a range of colors from white to red. Today, most flint com is grown in Central or South America. Dent corn, also called field corn, is often used as animal food. It is also the main kind of corn used when making industrial products and various food. It can be either white or yellow. Sweet corn is often eaten on the cob or it can be canned or frozen. It is not used for feeding animals or to make flour. Sweet corn gets its name because it contains more sugar than other types of com. Popcorn has a soft

[3] an acre: 4047 m2

starchy- center which is covered by a very hard shell. When a kernel of popcorn is heated it bursts open and becomes soft and light. It's then eaten with salt and butter.

There are many uses of corn. It is good for feeding cattle and chickens. Many of the soft drinks you enjoy are sweetened with corn syrup. The ink which is used to print books contains corn oil. Ethanol is made from corn. Maybe, the car that carries you to and from school runs on fuel which contains ethanol. Corn is also used in such products as glue, shoe polish, aspirin, ice-cream and cosmetics. New ways of using corn are being developed everyday.

55 Turkish Coffee

When the first coffee house in Istanbul was opened in the district known as Tahtakale behind the Spice Market in the 1550s, it attracted the attention of enthusiastic customers as well as religious people, who considered this strange new substance to be a harmful drug. In order to stop the spread of this new substance, they tried in vain to forbid its consumption, saying that it was sinful. Ships carrying loads of coffee were sunk in Istanbul harbour. Yet, despite all this opposition, coffee drinking spread very fast, and by the time of Murat III (1574-1595), there were over 600 coffee houses in Istanbul alone.

Coffee houses generally had an attractive view: Most had verandas and sometimes a decorative pool in the centre. Fashionable Turkish coffee houses served as gendemen's clubs where men discussed literature and listened to Turkish classical music.

The wide variety of often beautifully ornamented equipment used for preparing and serving Turkish coffee could fill a museum on their own. The coffee is boiled in a long handled coffee pot known as *cezve*, which has its own distinctive shape, as do the tiny coffee cups. In the past, the porcelain coffee cups were produced at the Iznik or Kutahya potteries. Sets of Turkish coffee cups were later produced by European manufacturers for local European markets and known as 'a la turque' coffee sets.

People who know the taste of a well-prepared Turkish coffee expect their coffee to be heated slowly over pieces of coal or wood, the copper coffee pot being frequently taken away from the fire so that it won't get overheated. It is important to have froth on top of the coffee. A heaped spoonful of Turkish coffee and sugar is allowed for each cup as a general rule today, although in the past most Turks drank their coffee without any sugar. Instead, they customarily ate or drank something sweet either before or after the coffee. Another custom which has died out today is the addition of some aromatic substance such as jasmine, ambergris, cloves or coriander.

56 Salt

Although there is no direct evidence that salt is the cause of high blood pressure or 'hypertension', there are studies which indicate that reducing salt intake lowers blood pressure. Some scientists are also concerned that excessive use of salt may cause asthma and kidney disease. Therefore, most doctors would welcome a decision by food manufacturers to decrease the amount of salt in food.

Many food manufacturers, however, are reluctant to reduce the amount of salt. It is an important flavor enhancer and preservative. British Salt, the leading manufacturer of evaporated salt products in the United Kingdom, points out that salt is an essential nutrient and regular intake is required to maintain bodily functions. Moreover, according to British Salt, there are greater risk factors in hypertension, such as obesity, lack of exercise, alcohol intake and smoking. Another reason why food producers are not keen on lowering the amount of salt is probably that they fear that this will lower the sales.

A recent study, published in The 'Lancet of April 1999, proves that if manufacturers cut the salt content of food, it will not necessarily affect the taste of the product. Anthony Rodgers and Bruce Neal conducted a study to examine the difference in taste between bread with standard and reduced salt content. Three types of wholemeal bread were prepared, identical in all respects except for salt content. One loaf contained the standard quantity, one loaf 10% reduced and one 20% reduced. Sixty participants, who did not know the salt content, were asked to rate the taste on a scale from zero to ten. They also had to guess which loaf contained the standard, 10% reduced and 20% reduced quantity. Of the 180 guesses of salt content, 63 were correct, which is not different from what would be expected by chance.

The study by Rodgers and Neal indicates that small reductions in salt content will not necessarily affect sales. If food manufacturers decide to diminish the amount of salt in food, the blood pressure of the entire population will shift downwards, which may result in considerable health benefits. One of Britain's largest supermarkets, *Asda*, has already decided to decrease the amount of salt in its products. The *Asda* products will contain up to 25% less salt.

57 Meat? No, Thanks

Even today, although many people are aware of the importance of a healthy diet, a vegetarian is often met with suspicion, or at least with surprise. Although mouths express polite interest, eyes say that a vegetarian is a crank, someone to be regarded only with suspicious curiosity or distrust. Such attitudes were perhaps justifiable when the "hippy" movements of the 60s and early 70s had just started. Vegetarianism, as a conscious ideology or way of life, was relatively new then and was associated with questioning accepted social structures and conventions. Not surprisingly, members of older generations still treat the vegetarians of the 2000s with a similar sort of suspicion or intolerance. However, today, vegetarians can be found everywhere. As more information becomes available, more and more people are consciously turning to a meat-free diet. Their reasons for doing so are many and the potential benefits are even more.

Vegetarians have an enormous health advantage. One of the major health problems in modern societies is not too little, but too much food, especially in the form of animal fats. Medical evidence suggests that animal fats, including butter, contribute to the development of cholesterol in the human body. (Most vegetarians have low levels of cholesterol.) High amounts of animal fats seem to be part of the cause of heart disease. They also seem to lead to certain kinds of cancer, and vegetarians typically have less of these cancers than people who eat meat. Overall, studies comparing the health of vegetarians and meat-eaters show that the meat-eaters are twice as likely to die of heart disease as vegetarians are. In addition, animals such as cows and sheep are given various treatments so that they grow at very high rates. Logically, chemicals introduced into animal flesh are later consumed, further up the food chain. Studies have indicated that growth hormone treatments and vaccines given to animals may be responsible for a variety of disorders including serious hormonal imbalances and hyperactivity in children. In short, better health is one reason that people choose to become vegetarians.

Increasing awareness of modern methods which in fact upset animals' natural life patterns is another factor which changes people's attitudes towards meat consumption. These methods include keeping cows in very small places which lack light and where they cannot move a lot, so their meat is softer and more delicious. Similarly, chickens are made to lay eggs more frequently by exposure to artificial periods of day and night. There are those who do not eat meat simply because they cannot accept or put up with the suffering that animals feel. This group of vegetarians believes that life, all life, is valuable, and that we do not have the right to destroy life to feed ourselves when there are other good sources of food.

Lastly, there are people who do not eat meat because of their religions, which prohibit the eating of meat. The largest of these is the Hindu religion, which has about 600 million believers in the world. Although not all Hindus are vegetarian, many are, and there are many other believers of other religions, such as Buddhism and even some Christian groups, who also do not eat meat.

These facts are available to everybody, and there are some who choose to react. To these people, it seems that the best way to show their reaction is to boycott the product. Most vegetarians do not regard themselves as ideals or models; they simply express their concern and do what they believe is right. A vegetarian isn't necessarily a crank. A vegetarian is someone who simply doesn't eat meat.

58 A Healthy Diet For Everyone

Sometimes, people are confused about what type of food is healthy, and what kind of food is unhealthy. In 1956, the USDA[4] described four basic food groups: meat (meat, fish, chicken, etc.), dairy (cheese, butter, etc.), grains (bread, cereals, rice, etc.), and fruit and vegetables. The USDA suggested how much of each food group was healthy to eat daily.

As a result of years of research, we know that too much animal fat is bad for our health. For example, Americans eat a lot of meat but only a small amount of grains, fruit, and vegetables. Because of their diet, they have high rates of cancer and heart disease. In Japan, in contrast, people eat large amounts of grains and very little meat. The Japanese have very low rates of cancer and heart disease. In fact, the Japanese live longer than anyone else in the world. Unfortunately, when Japanese people move to the United States, their rates of heart disease and cancer increase as their diet changes. Moreover, as hamburgers, ice cream, and other high-fat foods have become popular in Japan, the rates of heart disease and cancer are increasing there as well.

A healthy diet is important for children as well as adults. When adults have poor eating habits, their children usually do, too. After all, children eat the same way as their parents. When parents eat healthy food, the children will think it tastes good. Then they will develop good eating habits. Doctors advise parents to give their children healthier snacks such as fruit, vegetables, and fruit juice.

Everyone wants to live a long and healthy life. We know that the food we eat affects our health in different ways, so by improving our diet, we can enjoy many years of healthy living.

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[4] USDA: U.S. Department of Agriculture. It is responsible for controlling the quality of food in the United States.

59 Junk Food & No Exercise- The New Lifestyle

In today's fast-moving world, people have less and less time to spend eating, let alone cooking. It is probably for this reason that junk food has become so popular, and there's no doubt that it's here to stay. In fact, it seems that people simply can't get away from it. So, what exactly is junk food? Basically, it is anything that is high in calories but lacking in nutrition. Hamburgers, crisps, chocolate bars and hot dogs fall into this category. Pizzas, although they can have vegetable and cheese toppings, are also included as they contain a lot of fat.

Obviously, a diet of junk food is not the best thing for your health, particularly as it is high in saturated fat. In 1993, the *Journal of the National Cancer Institute* reported this type of fat to be associated with a greater risk of cancer. Apart from the risk of cancer, gaining weight is another side effect of consuming junk food. The fact that obesity has become a world-wide health problem proves this. The best advice, then, for those who cannot live without their hamburgers or chocolate bars, is to limit the amount of junk food they consume. Eating junk food now and then will probably do no harm.

But, why have our eating habits changed? "Because people are short of time, and they have lost their tradition," says one expert. He explains that people are too busy to cook and eat proper meals, so they grab whatever is available - and that is usually junk food. Also, the style of life represented on TV, especially in music videos, is fast. Young people pick up the idea that speed means excitement, whereas anything traditional is slow and boring. As a result, they turn down traditional food and go for junk food instead.

Another alarming thing about people's lifestyles today is that while the amount of junk food they eat has increased, the amount of exercise they do has actually decreased. Exercise plays an important part in keeping the body fit and healthy: it helps to control weight and, if taken regularly, can also decrease the chances of having a heart attack in later life. What is more, one doesn't have to exercise much to gain visible benefits. Doctors say that twenty minutes' exercise three times a week is all that is necessary.

Even though people nowadays are actually far more aware of the importance of exercise and a healthy diet than they were a few years ago, the new unhealthy way of life is surprisingly popular. Thus, researchers suggest that the new generation will be much more likely to suffer from heart and liver disease. What can't be emphasized enough is the fact that a balanced diet and regular exercise bring significant health benefits. One way or another, the vast majority of people appear to be missing out on this, due mainly to the pressures of modern life. Ironically, if they were to make time to exercise

and improve their eating habits, they would probably find that they were far better equipped to deal with their stressful lifestyles than they are now.

60 Healthy Eating For Diabetics

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Most of the functions of the human body are controlled by hormones. Insulin, a hormone produced by the pancreas, controls the sugar in the blood which is used by the body to generate energy. The insufficient production of insulin leads to a common disorder called diabetes.

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Having diabetes does not mean giving up all your favourite foods and eating differently from family and friends. However, a sugar-free diet still remains the cornerstone of the treatment of diabetes. Nowadays, doctors recommend that people with diabetes should continue their lives as usual, but should follow a well-balanced and healthy diet.

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The British Diabetic Association (BDA) has published guidelines to assist people who need to follow a special diet. The BDA recommends controlling bodyweight and reducing fat consumption. If there is a need to lose weight, realistic short-term targets are most helpful. Aiming for a slow but steady weight loss of one kilogram per week is ideal until the desired weight is achieved. Including more exercise in your daily routine and checking your weight once a week are also recommended.

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It is also advisable to avoid cooking meals using large amounts of fat — choose lean meat or low-fat items instead. Removing the skin from chicken and using fat-free milk are also good ways of reducing fat in the diet. Moreover, cutting down on the amount of butter and cheese by using the low-fat versions is recommended. Biscuits and cakes are also high in fat content.

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Eating plenty of fruit and vegetables is highly recommended. Beans and lentils contain a considerable amount of a certain type of fibre which helps to bring down blood sugar levels after meals. Choosing brown bread and flour instead of white, and high-fibre breakfast cereals is also appropriate.

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Foods like sweets, chocolate, cakes and biscuits should not be eaten as they usually contain high amounts of sugar and fat. In addition, less sugar must be used in cooking and "diet" drinks are preferable. Using an artificial sweetener instead of sugar also helps a great deal. It is also important to be careful with the sugar content of packaged food items by reading the labels and preferably deciding on a "diet" alternative.

61 Will Genetically Modified Food Feed The World?

If you want to start a heated discussion at a dinner party, bring up the topic of genetically modified foods. For many people, the idea of genetically altered, high-tech crop production raises all kinds of environmental, health and safety questions. Particularly in countries with a long tradition of agriculture, the idea seems against nature. In rich countries, there is a wide range of foods to choose from and a supply that easily meets the needs of the population. In developing countries, however, to feed fast-growing and underfed populations, the problem is simpler and much more urgent: Do the benefits of biotech outnumber the risks?

The statistics on population growth and hunger are disturbing. Last year the world's population reached 6 billion. And by 2050, the United Nations estimates, it will probably be about 9 billion. Almost all that growth will occur in developing countries. At the same time, the world's available farming land is declining. In fact, available farming land has declined steadily since 1960 and will decrease by half over the next 50 years, according to ISAAA (the International Service for the Acquisition of Agri-Biotech Applications).

The United Nations estimates that nearly 800 million people around the world are undernourished and the effects are deadly. About 400 million young women are iron deficient, which means they don't have enough iron in their bodies. This also means their babies might be born with various defects or weaknesses. As many as 100 million children suffer from vitamin A deficiency, a major cause of blindness. Millions of people suffer from other major illnesses and nutritional deficiencies as a result of not having enough food.

How can biotech help? In an effort to produce nutritionally improved crops, biotechnologists have developed genetically modified rice that is strengthened with beta-carotene and additional minerals. Biotech can also improve farming productivity in places where food shortages are caused by crop damage due to pests (harmful insects), crop viruses, drought (lack of rain) or bad quality soil. Damage caused by pests is incredible. The European corn borer, for example, destroys 40 million tons of the world's corn crop annually, about 7% of the total. Adding pest-resistant genes into seeds can help restore the balance. In Africa, for example, crop production* has increased significantly by using pest-resistant cotton. Viruses often cause great damage to basic crops in developing countries. Two years ago, Africa lost more than half its cassava crop —a key source of calories— because of the mosaic virus. Genetically modified, virus-resistant crops can reduce that damage. Similarly, in regions with very little rainfall, drought-tolerant seeds can reduce crop damage. Biotech can also help solve the problem of too much aluminum in soil, which can damage roots and cause crop failures. A gene that

helps neutralize aluminum toxicity in rice has been identified recently. Many scientists believe biotech could raise overall crop productivity in developing countries as much as 25% and help prevent the loss of those crops after they are harvested.

In spite of all that promise, biotech is far from being the whole answer. In developing countries, crop loss is only one cause of hunger. Poverty plays the largest role. Today, more than 1 billion people around the globe live on less than $1 a day. Making genetically modified crops available will not reduce hunger if farmers cannot afford to grow them, or if the local population cannot afford to buy them because they're expensive. Another difficulty is the problem of food distribution. Taken as a whole, the world produces enough food to feed everyone but much of it is simply in the wrong place. Especially in countries with undeveloped means of transport, geography restricts food availability and many biotech products won't even reach the regions where they are most needed. To overcome this problem, there is a need for better collaboration between governments and private biotech firms.

In brief, biotech is not a miracle but it promises to transform agriculture in many developing countries. If that promise is not fulfilled, the real losers will be their people, who could suffer for years.

62 Food And Culture

What kind of food do you like to eat? Do you eat raw fish? Dog meat? Cheese? People usually prefer to eat food from their own culture. In other words, they like eating food that they are familiar with. For example, the Japanese enjoy eating raw horse meat, but few Americans would want to taste it. Many Asians strongly dislike pizza, which is a very popular food in the United States. Milk is a very common drink in the United States for all people, young and old. In contrast, only babies drink it in China.

Some people do not eat particular food for religious reasons. For instance, Hindus do not eat beef because they believe cows are sacred. Similarly, Jewish people think pigs are not clean animals so they never eat pork.

Sociologists say that people prefer the food that they grew up with. As a cultural group, we learn to like and eat the things that we can find in our community. This is why in one place people eat horse meat and in another place they eat monkey brain.

Sometimes we need to change our eating habits. If we move or travel to a new place with a different culture, generally we can not find our favorite meals, so we may have to eat food that is different to us. Slowly, our tastes change and we begin to enjoy eating the food that once seemed unusual to us.

63 Meals In Britain

A traditional English breakfast is a very big meal — sausages, bacon, eggs, tomatoes, mushrooms and so on. But today many people just have cereal with milk and sugar, or toast with marmalade, jam, or honey. The traditional breakfast drink is tea, which people have with cold milk. Many visitors to Britain find this kind of tea very strange and tasteless. Apart from tea, people drink coffee, often instant coffee, which is made with just hot water.

For many people, lunch is a quick meal. In cities there are a lot of sandwich bars, where office workers can choose the kind of bread they want — brown, white, or a roll —- and then all sorts of salad and meat or fish to go in the sandwich. They can also go to pubs for lunch because these pubs serve good cheap food. School-children can have a hot meal at school, but many of them just take a snack from home—a sandwich, a drink, some fruit, and perhaps some crisps.

'Tea' not only means a drink but a meal as well. The meal includes sandwiches, cakes, and, of course, a cup of tea. Cream teas are popular. You have scones (a kind of cake) with cream and jam when you have a cream tea in a cafe.

The evening meal is the main meal of the day for many people. They usually have it quite early, between 6:00 and 8:00, and often the whole family eats together.

On Sundays many families have a traditional lunch. They have roast meat (beef, lamb, chicken, or pork) with vegetables and gravy, a sauce made from meat stock.

The British like food from other countries, too, especially from Italy, France, China and India. People often get take-away meals —you buy the food at the restaurant and then take it home to eat. Eating in Britain is quite international!

64 Healthy Diets From Around The World

The trick to finding healthy food, wherever it comes from, is to look carefully at its ingredients. No single cuisine - a country's distinct style of cooking - is all good or all bad. Each has something to teach us. The moral is simple: Whether you're eating Irish beef stew or French cassoulet, you need to know what's in it. With a little nutritional knowledge, you can sample some of the world's tastiest food and know you're also eating some of the best.

China: The Chinese have a balanced diet which is made up of about 69 percent carbohydrate, 10 percent protein, and only 21 percent fat. That's remarkably close to the mixture that Western nutritionists recommend. Rice, noodles, Chinese cabbage and mushrooms, along with other vegetables and small portions of fish and meat, are the staples of Chinese diets. That is, these are the most widely consumed food items in China. Recent medical research suggests that oriental mushrooms help boost the immune system and also have qualities that may help prevent heart disease. The downside of Chinese cookery, as in Japan, is the excessive use of soy sauce, which is extremely salty, and the use of monosodium glutamate (MSG), a meat tenderizer. MSG is as bad as salt if you're fighting high blood pressure, and it can also cause allergic reactions. For many people, when dining in Chinese restaurants it is best to ask for the MSG to be left out.

Mexico: Which Mexican dishes are best for health-conscious diners? Even though it is high in fat, guacamole is a surprisingly good choice. Guacamole is a thick mixture of avocado (a tropical fruit), tomato, onion, and spices, usually eaten cold with bread or chips. Most of the fat in avocado is monounsaturated, like the fat in olive oil, which is believed to lower cholesterol and be good for the development of cells. Seviche (fish marinated in lime juice) is low in fat overall; so are some chicken dishes like chicken tostadas, if they are not fried. In addition, in case you're wondering, the hot chili peppers of Mexican cuisine could actually be good for you, if you can tolerate the spiciness. Chili peppers, an inseparable ingredient of Mexican cuisine, are an excellent source of Vitamins A and C. They may even help you fight a cold, asthma, bronchitis, and sinusitis.

Alaska: Even in the remotest parts of the world, a health-food freak can find healthy diets. The tremendous amount of fish that Eskimos eat helps to prevent heart disease. Fish oil can be beneficial as it lowers blood pressure, cholesterol, and the blood's capacity to clot. A recent Dutch study showed that eating as few as two fish meals a week cut the death rate from coronary heart disease by half. Although it is very healthy, it is quite challenging to make such a monotonous diet tasty. One piece of advice is to carry one's own sauces when traveling to Alaska. A selected assortment of herbs and spices can do wonders to improve even the dullest dishes, and can make them even healthier.

Italy: In southern Italy, such staples as pasta, olive oil, garlic, and whole-wheat bread provide a true gift of health: protection from cancer and heart disease. Like oriental mushrooms, garlic is good for the heart and the immune system. When one is in Italy observing happy-looking and not-so-thin Italians, it may be hard to believe that their diet is healthy, but it is, and delicious too; so, when in Rome, do as the Romans do! Enjoy Italian food to your heart's content.

Japan: Two products of the soybean—miso and tofu—are healthy staples. Miso soup may fight cancer; tofu offers low-fat protein. Seaweed, the Japanese lettuce, is rich in many nutrients. On the other hand, Japan's smoked, salted, and pickled foods lead to a high incidence of stroke and stomach cancer.

64 Changing Diets

What do most Americans and Canadians usually eat? Many people think that the typical North American diet consists of fast food—hamburgers, hot dogs, French fries, pizza, fried chicken, and so on. They think Americans and Canadians also eat a lot of convenience food, usually frozen or canned, and junk food—candy, cookies, potato chips, and other things without much food value. Unfortunately, they are not wrong. The American diet is generally high in sugar, salt, fat and cholesterol, and these substances can cause certain illnesses.

However, people's eating habits are changing. They are becoming more interested in good health and nutrition is an important part of health. Nowadays, North Americans are eating less red meat and fewer eggs, and they are eating more chicken and fish. These foods do not contain much fat, so they are healthier. Many people are also buying more fresh vegetables and eating them either raw or steamed to keep the vitamins.

The fact that restaurant menus are changing also shows people's growing interest in good food. The North American diet now includes food from many different countries. More ethnic restaurants are opening in big cities in the United States and Canada. Foods from China, Japan, Korea, Thailand, India, and the Middle East are very popular. Even fast-food places now offer low-fat hamburgers, roasted (instead of fried) chicken, and salad bars with a wide variety of fresh fruits and vegetables.

In the United States and Canada, food is a very common topic of conversation. People always discuss new dishes, restaurants, diet plans, and ideas about nutrition. The arguments about the best diets and foods will continue: Are vegetarians really healthy? Is a little alcohol good for relaxation? Can yellow vegetables really prevent cancer? One thing we know for sure: The key to good nutrition is balance. We can eat various kinds of food, control the quantities that we eat, limit fats, and do exercise.

67 Lucky People

In the Caucasus region, nearly 50 out of every 100,000 people live to celebrate their 100th birthday, and many don't stop at 100! The Pakistani Hunzas, who live high in the Himalaya Mountains, and the Vilcabambans of the Andes Mountains in Ecuador seem to share the same secret, too. This is very surprising because in America only 3 people in 100,000 reach 100.

These people remain healthy in body and spirit in spite of the passage of time. While many older people in industrial societies become weak and ill in their 60s and 70s, some people in the Caucasus region, aged 110 to 140, work in the fields together with their great-great -grandchildren. Even the idea of ageing is foreign to them. When asked, "At what age does youth end?" most of these old people had no answer. Several replied, "Well, perhaps at the age of 80." The youngest estimate was age 60.

What could be the reasons for this ability to survive to such old age, and to survive so well? First of all, hard physical work is a way of life for all of these long-lived people. They begin their long days of physical labor as children and never seem to stop. Mr. Rustam Mamedov, for example, is 142 years old, but he has no intentions of retiring from his life as a farmer. "Why? What else would I do?" he asks. Actually, he has slowed down a bit. Now, he might stop for the day after 6 hours in the field instead of 10.

All these people get healthful rewards from the environment in which they work. They all come from mountainous regions. They live and work at 1,660 to 4,000 meters above the sea level, where the air has less oxygen and is pollution-free. This reduced-oxygen environment makes the heart and blood vessel system stronger.

Another factor that may contribute to the good health of these people is their isolation. To a great degree, they are separated from the pressures and worries of an industrial society.

Inherited factors also play some role. Most of the longest-lived people had parents and grand-parents who also reached very old ages. Therefore, good family genes may be a factor in living longer.

Finally, although these three groups don't eat exactly the same foods, their diets are similar. The Hunzas, Vilcabambans and Caucasians eat little meat. Their diets are full of fresh fruits, vegetables, nuts, grains, cheese, and milk. They never eat more food than their bodies need.

It is clear that isolation from urban pressures and pollution, clean mountain air, daily hard work, moderate diets, good genes, and a youthful approach to life all contribute to the health and remarkable long life of all these people.

68 Campodimelans

Although she doesn't know it yet, three-month-old Cecilia, who was born in an Italian village called Campodimele, has a good chance of living at least 100 years. Not that her parents have discovered the secret to a long life — they are just lucky to have been born in Campodimele, a small village of 850 people in Italy. The mayor of the village claims that few Campodimelans die before the age of 85, and many live longer. His grandfather lived to 95, his grandmother to 97 and his aunt to 100. More than 90 people in the village are aged between 75 and 99 — a surprising number, which led the World Health Organisation (WHO) to send scientists to the village to investigate. They discovered that the old people's cholesterol levels were far lower than newborn babies' cholesterol levels.

The oldest villager, at 99, thinks that hard work as well as taking regular exercise can help you live longer. A favorite activity among the older people is going to see the village chickens. A long street leads from the village to dozens of stone chicken houses on a hill. Getting there can mean a good hour's walk and sometimes they do this twice a day. People also think that the villagers' easy-going nature and sense of emotional balance also helps. Nobody suffers from depression and old people don't get lonely because they live with their families. Life is unhurried, stress is unknown and traffic is banned from the centre of the village.

During the study carried out by WHO in Campodimele, the researchers found that the blood pressure of the elderly in the area moved up and down far less than that of the majority of Italians. Stable blood pressure helps people live for a long time. The study also looked at the children and grandchildren of the elderly and discovered that they also had much lower blood pressure than the average. This was confirmed by the same study done on a group from the village who went to live in Canada in the 1960's. Their blood pressure was also low and this led the scientists to believe that the secret of why they live so long could be in the Campodimelans' genes. However, this is not the whole answer.

In Campodimele, old people walk for at least two hours daily, eat at the same time each day, get up at dawn and go to bed at sunset. Baby Cecilia's 93-year-old great grandmother thinks that eating lots of spring onions is the key to a long life. She eats them raw, dressed with oil, vinegar and red pepper. Her grandson was so impressed with her recipes that he has opened a restaurant. The menu is very Mediterranean. There are lots of fresh vegetables, beans, wild mushrooms, almost no butter and very little salt. The local specialty is a dish of peas which is often served with homemade pasta or snails. Either side dish adds to the taste of the peas and makes it a perfect meal for celebrating your hundredth birthday.

69 Rain Forest Remedies

The teacher and the student sit facing each other on the floor of the open-sided hut in Western Samoa. The teacher is Salome Isofea, a young healer who is demonstrating her art. The man opposite her, a Westerner named Paul Alan Cox, is not an ordinary student. He is a botany professor at Brigham Young University in Utah, a world specialist in medical plants. To people here, he is known as Nafanua, in honor of a god who once protected the village and its forests.

Salome is explaining a traditional cure for pterygium, an eye disease common to the tropics, in which vision gradually becomes obscured as a layer of tissue covers the cornea. The traditional cure used by healers is leaves of *Centella asiatica*, which Salome chews and then spreads on a piece of cloth and places as a compress on the afflicted eye for three consecutive nights. Before this can be done, Salome explains, there is another crucial part of the cure. Holding a bowl containing ashes, she scatters them in the direction of Cox, who is playing the patient. When he asks why the ashes are necessary, she replies that they enhance 'spiritual transmission' between the healer and the patient.

All Samoan healers are women who learned their art from their mothers, who in turn taught it to their daughters. Now the knowledge of the recipes and their administration, even the location of the plants in the forests, are endangered as more and more daughters abandon the long training period in favor of using Western medicine. For this reason, the discovery of young practicing healers like Salome delights Cox, who believes that only people like her can prevent the loss of centuries of knowledge. If he can carry Salome's knowledge to the developed world in the form of plants whose chemical compounds might help combat incurable diseases—notably cancer, AIDS, and Alzheimer's—the enthusiasm to save the Samoan rain forest, and all forests, will be much stronger.

According to Gordon Cragg, chief of the National Cancer Institute's natural-products branch, nature produces chemicals that no chemist would ever dream of at the laboratory bench. This is encouraging for biologists and environmentalists who are concerned about the dwindling of the planet's biodiversity, mostly concentrated in an area around the equator. Human activity, from farming to logging and road building, is driving countless species to extinction even before they have been discovered. "I see ethno-botany—the study of the relationship between people and plants—as the key to the preservation of this vast collection of species, as well as a pathway to halting many diseases," says Cox.

Major technological advances in testing processes have helped Cox and other ethno botanists immensely. Pharmacologists must analyze between 10,000 and 17,000 chemical compounds before

finding one with the potential to be tested to achieve the desired result in humans. Until recently, animal testing and clinical trials of a single drug required an average 12 years of research and cost up to 5300 million. However, initial screening can now be done in a matter of days without using animals. Molecular biologists can isolate enzymes that can *trigger* human exdiseases, then expose those enzymes to a plant's chemical compounds. If a plant extract blocks the action of a particular enzyme, they know the plant has drug potential. By extracting specific chemicals from the leaves, roots or bark and testing each sample individually, scientists can *determine* which of the plant's thousands of compounds actually blocks the enzyme.

As a result of these advances, about 100 U.S. companies are searching out plants. Drug companies and scientific institutions are collaborating on field research all over the globe to study as many natural substances as possible before they, or the native people who use them, disappear. Some work with a group of ethno-botanists like Cox, who know a lot about indigenous people, to search out drug candidates. Others use a different approach, mass- collecting plants whose chemical compounds might contribute to new drugs.

Cox has spent years in Samoa interviewing traditional healers and learning their trade of healing by working as their apprentice, i.e. trainee. He knows that if the rain forests of Samoa continue to disappear, hundreds of potential drugs hidden there may never be found. Therefore, he spends much of his time trying to preserve the forest area that remains. More than 80% of the rain forest has already been logged because that's the only way Samoans can earn money. However, Cox aims at offering cash-poor Western Samoans an alternative to having their forest cut down. He believes they can earn money by preserving their forest, their wealth, instead of selling it to loggers.

70 Typical Or Not?

If the idea of a fitness routine makes you feel exhausted and if you shiver even at the thought of jogging round the park in the winter wind, then Qigong might be just the right form of exercise you are looking for. It won't tire you a lot but will guarantee you good physical conditioning.

This new gentle form of oriental gymnastics is composed of a system of meditative exercises. These exercises involve standing motionless in a series of postures for half an hour a day, or combining simple movements with breathing exercises. Although this type of exercise does not build muscles, it is quickly growing in popularity. The reason for this is that in addition to its simplicity, it is a good way of reducing stress, stimulating the circulation and strengthening the body's immune system.

Qigong means training your energy, and is compared to acupuncture without needles. According to Chinese beliefs, *qi* is the vital energy which circulates within the human body and throughout nature. *Qi* is thought to flow along the system of body channels just like blood does. Consequently, *Qigong* is based on the hypothesis that illnesses and psychological problems are caused when the natural energy flow is blocked. *Qigong* directs energy to the troublespot, and thus can be used in treating illnesses like asthma and hypertension. This holistic method has also been shown to be successful in treating obesity. A Dutch patient who was taken by her father to a *Qigong* practitioner two years ago says: "I wasn't sure, at the beginning, if the result would be good. I'd tried so many diets, but none had worked." Once she started the *Qigong* routine, her weight began to drop, despite only small changes in her diet. "I can't believe that I weigh 50 kg. less than I used to and it's not difficult at all. Since I started doing the exercises I haven't been so hungry and I've had more energy, so I'm more active" she says.

Chinese practitioners have found it difficult to persuade the Western mind of the powers of *Qigong.* However, governments that want to cut down healthcare costs are endorsing Qigong, although medical science cannot explain it. In Germany, for example, *Qigong* is available on the national healthcare system, and many doctors are prescribing it for aches, insomnia and allergies. Many patients who have suffered from allergies for years have found that, since starting Qigong, they haven't been ill at all, or only suffer from very slight allergic reactions.

In Europe, it has been mostly used to treat relatively minor conditions, but recently Qigong has achieved dramatic results with more serious conditions. In one case, a French air stewardess was told by her doctor that she only had a few months to live because she had cancer. Conventional treatment, including chemotherapy and all kinds of medicine, had been unsuccessful. It made her so ill that she nearly died. After starting *Qigong*, however, the patient immediately began to feel better and was able

to return to work. Even more surprisingly, the doctors couldn't find any traces of the disease. While this may sound like a miracle, one should point out that *Qigong* may not necessarily cure everyone, as it depends on how much exercise the patient gets and on the individual's psychological motivation. Nevertheless, even if it does not cure the patient, it has the potential to prolong his/her life.

71 Acupuncture

Today in most western cultures acupuncture is considered a "new alternative" medicine. In reality acupuncture is a practiced medical treatment that is over 5,000 years old. Very basically, acupuncture is the insertion of very fine needles into the skin in order to influence the physiological functioning of the body.

The first record of acupuncture is found in the 4,700-year-old Huang Di Nei Jing. This is said to be the oldest medical textbook in the world. It is said to have been written down from even earlier theories by Shen Nung, the father of Chinese Medicine, who documented theories about circulation, the pulse, and the heart over 4,000 years before European medicine had any concept of them.

As the basis of acupuncture, Shen Nung theorized that the body has an energy force running throughout it. This energy force is known as Qi (roughly pronounced as Chee). The Qi consists of all essential life activities which include the spiritual, emotional, mental and physical aspects of life. A person's health is influenced by the flow of Qi in the body, in combination with the universal forces of Yin and Yang. If the flow of Qi is insufficient or unbalanced, Yin and Yang become unbalanced, and illness may occur. Qi travels throughout the body along "meridians" or special pathways, which are the same on both sides of the body (paired). There are fourteen main meridians running vertically up and down the surface of the body. Out of these, there are twelve organ meridians in each half of the body. There are also two unpaired midline meridians. The acupuncture points are specific locations where the meridians come to the surface of the skin, and are easily accessible by "needling". The connections between them ensure that there is an even circulation of Qi, a balance between Yin and Yang. Energy constantly flows up and down these pathways. When they become obstructed, Yin and Yang are said to be thrown out of balance, which causes illness. Acupuncture is said to restore the balance.

There are a few related procedures that fall into the range of acupuncture treatments. The first is electro-acupuncture. This is the use of very small electrical impulses through the Acupuncture needles. This method is generally used for analgesia (pain relief or prevention). The amount of power used is only a few micro amperes, but the frequency of the current can vary from 5 to 2,000 Hertz. The higher frequencies are generally used for surgery (usually abdominal), and the lower frequencies for general pain relief. The first reported successful use of electro-acupuncture was in 1958 in China for a tonsillectomy. Today, it is a common method of surgical analgesia used in China. Besides electrical impulses, lasers and sound waves are also used for stimulating acupuncture points. This is called Sonopuncture. A very commonly used treatment is auriculotherapy, or ear acupuncture. The theory is that since the ear has a rich nerve and blood supply, it would have connections all over, the body. For

this reason, the ear has many acupuncture points which correspond to many parts and organs of the body. Auricular acupuncture has been successful in treating problems ranging from obesity to alcoholism to drug addiction. There are numerous studies, either completed or currently going on, which affirm auricular acupuncture's effectiveness. Another popular treatment method is moxibustion, which is the treatment of diseases by applying heat produced by burning specific herbs on acupuncture points. Acupuncture and moxibustion are considered complementary forms of treatment, and are commonly used together. Moxibustion is used for ailments such as bronchial asthma, bronchitis, and certain types of paralysis.

Acupuncture is also used in treating addictions to alcohol, tobacco (nicotine) and "hard" drugs. It can rid the body of the physical dependency; however, cannot rid the mind of the habit. For this reason, acupuncture treatment of addictions has not been fully successful.

72 Where Did They Come From?

In the modern world, transportation and the spread of products have made almost any foods and drinks available all over the world, but many of the foods that we eat today originally were eaten or grown in only one part of the world. The origins of various foods are interesting. Tomatoes, for example, are originally from the Americas, and so are potatoes. Both were first taken to Spain and spread from there to the rest of Europe and, eventually, the rest of the world. Today they are so common all over the world that it is difficult to imagine they were unknown outside of the Americas only five hundred years ago.

One food that is rapidly spreading throughout the world is the hamburger. The hamburger has many variations. The basic hamburger of the past was made of chopped or ground beef that had been fried and put between two halves of a round roll or bun. Today it may still be eaten plain or with additions. In modern fast-food shops, hamburgers are sold in what seem like hundreds of variations. The cheeseburger, a hamburger fried with a slice of cheese on top, is a common variation. Today, modern hamburgers are eaten with many different additions, including lettuce, tomato, mustard, ketchup, pickles, and onions.

As recently as twenty years ago, the hamburger was a basic food in the United States, Canada, and some European countries, but it was not eaten in many other countries. Now, energetic business people are taking the hamburger to South America, Japan, the Middle East, and China. Hamburgers have an interesting history. They were made at one time in the German city of Hamburg, but the custom of chopping meat, i.e., cutting it into small pieces, was begun by the Tartars of Central Asia more than a thousand years ago. They chopped the meat of cows because the meat was tough, and they often ate the meat uncooked. Many centuries later, Russian Tartars carried the custom of eating chopped meat to Germany. Germans began to eat chopped meat also, and in the city of Hamburg, chopped meat was eaten both cooked and raw and became known as "Hamburg Steak." In the late nineteenth century, German immigrants to the United States brought this custom to the New World. By the early part of the last century, Americans were eating hamburger steaks between slices of bread and calling the sandwich "hamburger." The sandwich spread quickly throughout the United States.

Pasta is an Italian word for a large group of foods made from wheat flour, cut and formed into various shapes, eaten after being boiled in water, and usually combined with a sauce. Spaghetti, macaroni, and noodles are all forms of pasta, but pasta, especially In Italy, can have over five hundred shapes and sizes. It is not clear where pasta originated. The usual explanation is that noodles were first made in China over three thousand years ago. When Marco Polo, the Italian traveler, returned to Italy

from China in the 1300s, he is said to have returned with the idea of making pasta. According to the story, the Italians took the Chinese idea and developed it into the many forms of pasta we have today. Other historians, however, can show that the Italians were eating a kind of ravioli, or a meat and vegetable filling inside a pasta shell, long before Marco Polo returned from China. So we really do not know if pasta was invented in China and carried to Italy or if it was invented in both places.

Italians eat about fifty pounds of pasta per person every year. People in the United States eat only about seven pounds per person. Pasta is a good food. It has a lot of carbohydrates, and carbohydrates are now thought to be a very important ingredient in human nutrition. Pasta is also low in fat. Since pasta can be cooked and eaten in so many different ways, and because it is eaten in so many different countries, it must be called one of the basic foods of the world.

Sauces are used in cooking almost everywhere. In fact, it is difficult to define the word sauce because it is used in so many different ways. Sauces are cooked and added to foods such as pasta. They may also be uncooked, such as the white mayonnaise that is used on many sandwiches. One simple sauce which has become universal on dinner tables all over the world is ketchup. Actually, the word ketchup entered the English language before the sauce that we know today did. The word ketchup is from a Chinese word something sounding like ke- tshiap, which was used to mean "a kind of sauce for food." But ke-tshiap did not have any tomatoes in it, and modern ketchup is made mostly of tomatoes,

British sailors liked the ketchup sauce they found in Asia and took the idea back home to England. During the 1700s, ketchup was a common sauce used all over England. It still did not contain tomatoes, though. It was the Americans who first added tomatoes to the sauce. From 1800 to 1850, the recipe for ketchup changed until it became mostly a tomato sauce and also became a sauce used in almost every American kitchen. Ketchup spread from the United States to many other parts of die world, completing a journey that had begun many centuries earlier in China. Therefore, types of food, just like ideas and manufactured goods, often begin in one place and spread, often with many changes in form, from one place to another.

OCEAN

73 Ocean Exploration

Although there has always been great interest in the mysteries of the oceans, it has only been in recent decades that modern technology has enabled scientists to start exploring the ocean floor. As recently as the 1960s, scientists made developments in sounding and recording what happened under the sea. However, they had to rely on irregular reports from ships that were on the surface of the water. The data that were collected were unreliable, so new methods of reaching the ocean floor had to be developed.

Many nations took part in efforts to develop new ways of discovering the secrets of the oceans. They were interested in exploring areas containing rich mineral deposits, as well as documenting the wide variety of life forms found in the depths. They were also interested in investigating the earth's structure. The first step was to make maps of the ocean floor, which enabled scientists to guide submarines and prevent them from having accidents, as the seabed is covered with mountain ranges, plains and valleys, which can be dangerous for submarine vehicles. Detailed knowledge of the floor of the seas and oceans was also needed to better understand the constant movements of the earth's surface, such as the creation of new mountain ranges as a result of the eruption of volcanoes. In fact, such an eruption was witnessed by the crew of the *Alvin*, a unique type of submarine.

In April 1991, after a one-and-a-half-hour descent to the bed of the Pacific Ocean, the crew of] the Alvin did not see the sea life they expected. Instead, they saw a scene of disaster. The temperature outside the Alvin began to increase, and the crew realized they had arrived right after a volcanic eruption. Although they saw no movement of lava, they knew they had a unique chance to learn something. They had come to this particular spot because cameras had spotted an area that was rising rapidly. There had also been an increase in active hot springs. Scientists found out that there had just been a volcanic eruption. Fresh lava, which was discovered to be less than two weeks old, lay on the seabed. There was a huge hole in the' seabed and nothing was left alive. The scientists dropped a marker so that they could find the spot easily on return visits. There would be a chance to record the chemical and geological changes, and the renewal of plant and animal life. ,

Since then, scientists have been there twice. They went there first in March 1992 and then in December 2003. In 1992, they saw that the seabed had changed rapidly since the explosion. For example, tube worms had reached a giant size: they had grown to a length of about two meters. Scientists also found out about mineral chimneys that allow fluid and steam to escape from the lava. In fact, this was the first time scientists were able to see the growth of these chimneys from birth. They

also witnessed the development of an underwater 'plumbing' system. They took samples from the chimneys for analysis and measured the temperature of

74 Saving The Ugly

Going out onto rolling seas before dawn to scare away man-eating sharks may not be a dream job, but for Jim Lumb, the work has its reward: he protects swimmers on Sydney's beaches from "the jaws" of the deep. Now, he also helps protect sharks from humans. "You see a fin coming out of the water and it's wonderful," says Mr. Lumb, as he moves his 50-foot boat named Sea Rogue along the long nets that keep sharks away from swimming areas.

Last December, Australia passed a law protecting two endangered shark species, ending the time-honored task of "shark police," who merely killed the feared creatures. Now they must preserve them - even the Great White shark - by releasing, i.e., setting them free if they are entangled in the beach nets. Australian officials say that, the number of Great Whites has decreased off the coast, mainly because of fishing. Australia has joined California, Florida, Namibia, and South Africa in protecting sharks. The government has put the Great White and the less-threatening Gray Nurse shark on its list of endangered species. It has also told Australia's fishermen that if their nets snag a live Great White or Gray Nurse, they should release it - if they can do so without being bitten. However, some shark police aren't too pleased with the new rules. Lumb's son, James, who also works on the Sea Rogue, believes that the prospect of freeing a Great White is extremely dangerous. "There's just not any way you could do it," he insists. Fortunately for Lumb and other workers, they are exempt from penalties if a protected shark is' killed-in a net. While the Lumbs have yet to save a Great White, they do what they can to release smaller, harmless sharks like the Port Jackson, named after Sydney's harbor. "'....

"We just want to prevent sharks from coming to the beaches. If I didn't catch a shark at all, I'd be happy," Jim says. He and his colleagues move their mesh nets, each 164 yards long, between beaches to try to prevent sharks from establishing territories. They are taken away during the winter, when fewer people visit the beach. Jim estimates he catches about 50 sharks on his beat each season. Most die as they struggle to break free from the nets.

Famous for its surfing and life-saving culture, Sydney became the first place in the world to try to make its beaches "shark-proof' following a spate of attacks in the 1920s and 1930s. The mesh nets first appeared around the city's beaches in 1937. Since then, nets have been placed around other beaches. The Australian government estimates that roughly 500 great whites are killed off the coast each year, and only 10,000 remain in this part of the world. They are often caught inadvertently by fishermen. These few sharks that are caught by accident bring high prices in Asia, where shark fin soup is a delicacy. Other shark parts are used in health and beauty products. Between 1990 and 1996, Australia recorded 45 shark attacks, resulting in seven deaths. Yet, sympathy for the great white has grown due to

concern that the fish may disappear. Australia's Environment Minister, Robert Hill, says people now not only want to preserve the *furries and cuddlies*, or cute and lovely animals such as the panda, but also species viewed as threatening.

75 Exploring The Depths Of The Ocean

Doctor Bob Ballard is an aquanaut —- an explorer of the world's seas and oceans. He has visited the bottom of oceans in a mini-submarine and explored such things as the Titanic and the German battleship the Bismark. Most recently he has discovered the ship Lusitania, which sank off the coast of Ireland in 1915. Ballard has made these visits alone since he joined the Deep Submergence Laboratory in 1967.

Making these visits, however, is very difficult. The mini-submarines which only have room for one man and take over two hours to .reach the sea-bed, and then can only stay there for three hours. Because of these problems, Ballard has developed two robot submarines which send him information 24 hours a day. These robots are known as the Argo-Jason system. The Argo is lowered by cable from a ship on the surface of the ocean and it follows the floor of the ocean and sends back new information which helps Ballard and his team to make maps.

The Jason, however, is smaller and is a true robot. It can move completely independently across the ocean floor. For instance, although it was still attached to the surface ship, it actually went inside the Titanic. Jason has two control systems. It can be directed from the surface ship, or it can be programmed by computer before it goes down. Either way, it is small enough to get within a centimeter of its target.

At one time, the quality of the pictures which Jason sent back to the ship was not very good. New technology, however, has enabled Jason to send back clear, full color television pictures to the surface ship. An operator can sit in the ship, surrounded by television screens, and see everything Jason is filming. Ballard says it is almost the same as being in the submarine himself. At his home by the sea in America, Ballard has built an electronic centre. By using satellite links he can send other robots, just like Jason, to various underwater spots all over the world without ever leaving his house!

Despite the use of new technology, Ballard says that only a tiny part of the ocean floor has been explored. For example, the Mid-Adantic Ridge, a huge underwater mountain range, is the Earth's largest geographical feature yet it was discovered under the ocean after man had already walked on the moon.

Ballard dreams of people living under the sea in the 21st century. According to him, problems such as energy shortage and overcrowding can be solved by man making use of parts of the ocean. He believes that many people think Mars is a friendlier place to live than under the sea, and that many are afraid of the idea of living under the sea. He says that people have always been afraid of the unknown,

and that we must rise above these fears. If we continue to live with our fears, we might never find answers to our questions. Ballard, in short, thinks people should start considering living under water.

76 What is an MPA?

A Marine Protected Area (MPA) is an area of the ocean that is protected by law in order to preserve areas of high biological importance. It is similar to a national park; an MPA tries to conserve the life and habitat within. This can include the sea floor and all the life above it in the water.

Human activities that destroy the habitat or endanger a species by removing too many individuals are banned in an MPA. Marine biologists have identified mining, oil exploration and aquaculture, as some activities that may be destructive and need to be stopped in areas that have to be protected. Different MPAs may have different goals, therefore, in some, fishing may be allowed, whereas others may be no-go zones for anyone.

Marine Protected Areas may become an important tool for creating permanent fisheries. Past fishery management simply tried to limit the amount of fish caught; it did not consider entire ecosystems. An MPA can be designed to protect important habitats. MPAs can also function to save endangered species by protecting their habitat. Protected areas are beneficial for conservation, but they are also good for improving fisheries and increasing local economic opportunities.

When they are properly managed and enforced, Marine Protected Areas have been effective in protecting and rebuilding many marine species. The numbers of certain fish and other species often increase in the waters next to a protected area as well. This is a good thing for local fisheries. It is called the "Spillover Effect". If an area is protected from fishing, the fish in that area will be able to grow older and bigger. Larger fish are able to produce more eggs and therefore more juvenile fish. When these juveniles grow up, and the MPA becomes too full, as there are no fences in the ocean, the fish will move out of the area and into fishing grounds where they can be caught by fishermen. A couple of years after MPAs were established in Spain, fisheries reported 50-80% higher catches next to these protected areas. MPAs seem to be doing the job scientists thought they would.

Taken from Ocean link: Ocean-News

FLIGHT

77 Desire To Fly

Man has long wanted to fly. He saw birds, envied them and tried to imitate them. Over the ages, countless attempts were made: men constructed wings, fastened them to their arms and legs and jumped off towers and hill tops. These 'bird-men' flapped their wings for a short space of time and then fell to the ground. What was not realized in those early years was that birds have muscles very much stronger, in proportion to their size, than men. Human limbs cannot provide sufficient strength to lift the body off the ground. The secret of flight did not lie in making wings, but in discovering the right kind of power, and how to use it.

In the 18th century, the invention of the hot-air balloon by the Montgolfier brothers of France was seen as a great step forward. In 1783, in the presence of the King and Queen, it took three passengers safely up into the air and down again: they were a sheep, a cock and a duck. Later, ballooning became a fashionable pastime rather than a means of transportation. The cigar-shaped airships which were invented slightly later did not solve the problem of flying because they had no means of power or control: their designers could not find an engine strong enough yet light enough to drive the aircraft. The airship went where the wand blew it, could lose height and-could easily catch fire, so as a means of passenger transport it turned out to be neither practical nor safe.

So the difficulty remained: a true flying machine which was heavier than air and capable of carrying people was still to be invented. Experiments were carried out in many countries, sometimes with models driven by steam engines, but these were too heavy to be used in an airplane with a pilot. The answer finally came at the beginning of the 20,h century with the invention of the internal combustion engine — the kind used in motor cars. Here at last was a powerful, yet comparatively light engine, driven by petrol and capable of being fitted into an airplane. In 1903, two Americans, the brothers Wilbur and Orville Wright, flew a powered airplane for the first time. Their success encouraged designers everywhere. Although there were now new, different problems, mainly to do with safety and the training of pilots, progress was rapid. These were exciting days and interest was intense. At Reims, in 1909, a crowd of a quarter of a million gathered at the first Air Display, and saw thirty-eight different aircraft take part. The age of the airplane had arrived.

78 Ballooning

The first means of air transportation was not the airplane. It was the balloon. People traveled by balloons 100 years before there were planes or jet aircraft. In those early days, ballooning was exciting, but it was also dangerous. Sometimes the balloons fell suddenly. Sometimes they burned, but these dangers did not stop the balloonists.

Flying a balloon is not like flying a plane. It is completely different because the balloon has no engine and therefore no power of its own. The wind directs the balloon. It goes where the wind blows. The pilot can control only the height of the balloon. He or she can raise and lower the balloon to find the right wind direction. This is how a good pilot controls where the balloon goes.

The first balloon flight took place in France in 1783. Two Frenchmen, the Montgolfier brothers, made a very large paper bag. It was a test balloon without passengers. It was filled with hot air. Hot air is lighter than cold air, so it pushed the balloon up. The Montgolfiers1 hot air balloon went up 1,000 feet in the sky.

Later that same year, two other Frenchmen went up in a basket attached under a balloon. They built a fire under the balloon to make the air hot, This made the balloon stay up in the air for a few hours. But their balloon was tied to the ground, so it could not go anywhere.

The first free balloon flight was in December, 1783. The balloon flew for 25 minutes over Paris. It traveled about 5 V2 miles. Ballooning continued to grow in popularity, and soon other balloonists tried longer flights. A major event in the history of ballooning was the first long flight over water. On January 7, 1785, Jean Pierre Francois Blanchard and John Jeffries made the first trip over the English Channel in a hydrogen balloon. After about an hour, their balloon unexpectedly lost gas and began to go down toward the water. They threw out some equipment and food to make the balloon lighter, but it still continued to fall, so they threw out almost everything in the basket-even some of their clothes. Finally, after about three hours, they landed in France, cold but safe.

During the nineteenth century, ballooning was popular until the invention of the airplane. There were balloon races all over Europe. Balloons were also used by armies in wars to transport equipment, and by scientists to study the meteorology. After the airplane was invented, people generally lost interest in balloons. Planes were much faster and easier to control. However, some people today still like to go up in balloons. High up in the balloon basket, they find peace and quiet. They also have a wonderful view of the world below.

79 Around-The-World In a Balloon

Bertrand Piccard and Brian Jones received, a heroes' welcome at Cointrin Airport, Geneva, Switzerland, as the first team to successfully complete a round-the-world journey in a balloon. Their trip took about nineteen days and twenty-one hours. They departed on March 1, 1999, from Chateau d'Oex, Switzerland, headed south into Africa and then east over the Arabian Peninsula, Asia, the Pacific Ocean, Central America and the Atlantic Ocean before crossing over Mauritania, Africa on March 20. They landed in Egypt on the 22nd. Breitling, the Swiss watchmaking company, sponsored the balloon flight.

Piccard, a 41-year-old Swiss psychiatrist, who comes from a family of adventurers, and Jones, a 51-year-old British balloon flight instructor, tried to accomplish something never done before, and they were successful.

Their big, silver balloon, the Breitling Orbiter 3, helped them obtain the one-million-dollar prize offered by the Anheuser-Busch Co. and break two other ballooning records: the longest time in the air and the furthest distance traveled - more than 26,000 miles.

Although Piccard and Jones had their share of problems, they were able to avoid the kinds of things that caused their two previous attempts and the numerous attempts by other groups to fail, such as lack of fuel, weak winds, extremes of temperature, and thunderstorms. Their cabin was actually quite spacious, measuring 5.4 meters long and 2.9 meters high. It was pressurized, so no special oxygen tanks or breathing apparatus were needed. Moreover, the Orbiter 3 crew employed a team of meteorologists to ensure that Piccard and Jones would know where the most favorable winds were to be found. The Orbiter 3 weighed about 9 tons, most of it fuel. The Orbiter itself was designed slightly differently than the other balloons which failed to travel around the globe. The shape was slightly changed to minimize the effects of both heat and cold on the helium gas. Furthermore, the helium cell was enlarged so that it was capable of holding approximately 650,000 cubic feet of helium. Finally, propane was burned this time instead of kerosene, which, although lighter, is more difficult to control.

This well-designed balloon carried Piccard and Jones to success and when they returned, by plane, to Switzerland, it was time to celebrate. The corks were popping, the champagne was flowing, trumpets were playing and the air was thick with confetti.

80 Last Balloon To Nowhere

Solomon August Andree, a serious Swede, was only 22 when he had his first experience with balloons while working at an aeronautics fair[5]. From then on, he devoted himself to the study of aeronautics. More experienced balloonists were greatly surprised that a man so young and inexperienced could go up into the air, in varying weather conditions, and never once showed any signs of fear. Andree's first balloon was the Svea, which the publisher of an evening newspaper in Stockholm had bought for him "to promote science." After that, ballooning became his entire life. In the Svea, he made many significant weather observations, studied the speed and movement of sound, and took some remarkable photographs from the air. His greatest accomplishments in the early 1890s were several flights across the Baltic Sea. Then, in 1895, Andree surprised everyone by announcing: "It is possible for a balloon to fly to the North Pole!" Many people disagreed by saying, "How can a balloon stay up in the air that long?" Andree had the answer to this question. "In the summertime, conditions will be ideal. Continuous daylight will keep the temperature variation within a few degrees. Therefore, the gas will remain constant. By attaching a sail to the bag, a balloonist can increase the speed so that the distance can be covered in 15 to 20 days."

On May 31, 1896, after more than a year of preparation, the First Andree Polar Expedition left Stockholm. Andree was in headlines all around the world as he left for Danes Island, off Spitsbergen in Norway, from where the expedition would start. Then, for six weeks, the world —and especially Sweden— waited expectantly while the expedition stayed on Danes Island, waiting for the right weather. The right wind and weather never came, so on August 17, Andree gave up in frustration. The expedition went back to Stockholm in a state of depression. The man who had been labeled a national hero because of his previous brave flights became an object of criticism. Even the most sympathetic newspapers wrote that his chances of ballooning to the North Pole were impossible.

In the spring of 1897, with new hope and financially supported by Alfred Nobel, the inventor of dynamite and the donor of the Nobel prizes, Andree decided on a second attempt. This time, he was determined to get his new balloon, the Eagle, to fly in the air at all costs. Accompanying Andree on the flight would be Knut Fraenkel, a 27-year-old civil engineer, and Nils Strindberg, a 24-year-old university professor. In June 1897, the expedition was ready to take off in the Eagle. Despite the fact that Andree was a responsible individual and paid great attention to detail, the balloon had one dangerous fault: air escaped from it. The advice of everyone, including the balloon maker himself, was that the expedition should be postponed to a later date and the bag rebuilt. "I do not have the courage to

[5] aeronautics fair: an aircraft technology show or exhibition

postpone the flight again," Andree replied. He was strongly supported by both Strindberg and Fraenkel, even though it had been demonstrated that the Eagle was losing a lift capacity of 45 kilos every twenty-four hours. On July 11, 1897, at 2:30 in the afternoon, the flight order was given and the three men took off. For almost an hour, the Eagle could be seen against the gray north sky, growing smaller and smaller. Then it disappeared and was never seen again. After that, nobody heard from the expedition for 33 years.

In August of 1930, the bodies of the three airmen were found near where the balloon had fallen in the Arctic by a little Norwegian fishing boat. Even in his dying hours, Andree had acted meticulously: he had covered the diary in straw and then in oilcloth as tightly as possible. Even as he died, he was holding the book tightly to his chest, inside the protective clothing he wore. Its recordings were nearly as complete as anyone could have wished. On July 14, only three days after taking off, the balloon had lost too much air and had gone down on Arctic ice. The men marched on ice, eating the fish they caught and the bears and seals they killed. However, they became weaker and sicker with each passing day. Andree's diary gives a clue to one death, that of Nils Strindberg, who was the first to go. Andree and Fraenkel lived about two weeks longer. Strindberg died of what the other two men decided was a heart attack within a few hours. The last entry in Strindberg's diary, on October 6, was "Resignation." Knut Fraenkel died in his sleeping bag, and Solomon August Andree died leaning against a rock. The Great Adventure had ended.

81 Airliners

Soon after the end of the First World War, pioneers began to show that, contrary to popular opinion, long-distance flight across oceans could be made in safety. The excitement of fast air travel soon became attractive to business people and the wealthy, and civil airlines opened up in a number of countries. The first passenger aircraft were biplanes, two winged aeroplanes originally designed as wartime bombers, and often built of wood and fabric.

As more and more people wanted to travel by air, passenger aeroplanes were developed to meet the demand. Many of these were monoplanes, single-winged aircraft with two engines, and they made regular flights between the cities of Europe and those of the United States. During the 1930s, huge four-engined flying boats became popular for long distance flights across oceans, but they could only take off and land on calm water, and were not as safe as people believed. They were also slow and expensive to manufacture. The modern airliner was born in the mid-1930s with the arrival of the all-metal low-wing monoplanes, the Boeing 247 and the Douglas DC-2. The DC-2 and later the DC-3 proved to be faster, more reliable and more economical to operate than any of its rivals. Carrying up to 32 passengers, this aircraft helped to make air travel cheaper, and by 1939, nine out of every ten airliners in use throughout the world were DC-3s.

Before the Second World War and for a few years after it ended, airliners were powered by piston engines and their speed was limited. Their days were soon numbered with the arrival of the jet engine. The first turbojet airliner, de Havilland DH 106 Comet, was put into service in 1952. It had a cruising speed of about 800 kph, much faster than any other airliner of the time. Unfortunately, it was soon beset with problems. In 1953 and 1954, two Comets broke up in mid-air, killing everyone on board. Eventually, weaknesses in the design of the cabin structure were found responsible for these accidents. In 1958, a redesigned version, the Comet 4, was put into service and remained in use until the 1970s. Since the introduction of the Comet, the basic design and appearance of the airliners have changed very little. The Comet was followed by the Boeing 707. Other turbojets included the Douglas DC-8 and the Sud- Aviation Caravelle. Today, all long-range airliners are still designed, like the Comet, to cruise at the altitudes between 6,000 and 12,000 meters. At this height, the air is calmer. In addition, the engines and wings can operate at the highest efficiency.

The year 1969 saw the first of the big wide-bodied jet airliners, the Boeing 747, which can carry between 320 and 500 passengers. This was one of the turning points in the history of airliners as carrying more passengers makes flying more economical. The Boeing 747 was followed by other wide-bodied airliners. Among the latest airliners is the wide-bodied Boeing 747-400, which has a fully

computerized digital cockpit that can be operated by a flying crew of two. A flight engineer is no longer needed since engine performance is continually monitored by computer. It has advanced engines that consume less fuel and the aircraft can fly about 13,000 km without refueling. All these factors help to reduce the cost of long-distance air travel.

Smaller airliners, such as the Boeing 757, are also equipped with digital cockpits. The Airbus A320 is equipped with the latest avionics and fly-by-wire systems. Nearly all of this aircraft's functions are electronically controlled, involving over fifteen different interlinked computers. A centralized fault display system flashes up faults on a screen near the pilots. This system will soon be modified so that details of faults can be signaled to the ground. By the time the aircraft lands, ground engineers will have plans ready for repair work to begin immediately.

82 Amelia Mary Earhart

A WOMAN PILOT WHO MADE A DIFFERENCE

America's famous aviatrix Amelia Mary Earhart was born on July 24, 1897 in Kansas. Her grandfather, Alfred Otis was one of the leading citizens of Atchison. Therefore, Amelia and her sister Muriel had privilege and wealth. They attended private schools and enjoyed many of the comforts of life.

Amelia became interested in flying in 1920, when she went to an "aerial meet" at Daugherty Field. Given a helmet and goggles, she got in an open-cockpit biplane for a 10-minute flight over Los Angeles. This was the experience that made her crazy about flying. Shortly afterwards, she began lessons with pioneer aviatrix Anita "Neta" Snook and purchased a prototype of the Kinner airplane and named it "The Canary". She had several accidents during this period, but considering the unreliability of planes in the early days of aviation, some were due to unreliable engines and slowness of the planes.

In 1922, Amelia began participating in record breaking attempts and set a women's altitude record of 14,000 feet. One day in 1926, Amelia was called by Captain Railey, who had heard a lot about her, and was offered the chance to become the first woman to fly across the Atlantic; no woman had so far flown across the Atlantic. She was only going to be a passenger on the flight, but still she accepted the offer. After the journey, she became the subject of columns in newspapers all over the country. Aviation was quite a new concept and the industry was looking for ways of improving its image. Soon, Amelia was appointed assistant to the General Traffic Manager at Transcontinental Air Transport mainly with a responsibility for attracting women passengers.

In September, 1928, Amelia flew a solo flight from the Atlantic to the Pacific coast. When she returned to New York, she wrote a book about the Atlantic flight, 20 hours, 40 minutes. Meanwhile, she met George Pulmer Putnam, the publisher of her book, and married him in 1931. George played a very important role in many of the accomplishments Amelia made. A famous organization that was made up of 99 female pilots, the "Ninety-Nines", was formed by Amelia Earhart with the help of George Putnam.

In 1932, Amelia thought she needed to do something striking and started planning a solo flight across the Atlantic. No other person had successfully flown solo across the Atlantic since Lindbergh. At the time, several other women pilots were making preparations for such a flight and George knew that in order to keep Amelia's name in the forefront she would need to make the trip. On May 20, 1932, exactly 5 years after the Lindbergh flight, Amelia set off. She broke several records on this flight. She

was the first woman to fly the Atlantic solo and the only person to fly across it twice. She held the record for crossing it in the shortest time and it was the longest non-stop distance flown by a woman. The President sent his congratulations and said that she had shown that aviation was a science which could not be limited to men only.

In 1937, Amelia began to formulate plans for a round-the-world flight and on June 1, 1937 Amelia and her navigator Fred Noonan departed Miami. Unfortunately, after several days of flight, they lost radio contact. Authorities claimed that the plane went down 35-100 miles off the coast of Howland Island in the Pacific. President Roosevelt authorized a search by 9 naval ships and 66 aircraft at an estimated cost of over $4 million. The search was abandoned after three months. George continued to seek help in the search, but he too abandoned all hope of finding them alive. Over the years, many unconfirmed sightings have been reported and theories still abound. One of the many theories about Amelia's disappearance is that she was on a spy mission authorized by President Roosevelt and was captured by the Japanese. Another is that she dove her plane into the Pacific on purpose and still another is that she lived for years on an island in the South Pacific with a native fisherman. However, the whereabouts of her disappearance is yet to be uncovered.

SOCIOLOGY

83 Traditions

What are traditions? They are beliefs, customs, music, stories, food, and dress that each generation passes to the next. They are social habits. Their origins are largely unknown but we follow them without thinking. They are the things that make people around the world different from each other. However, the new trend, globalization, threatens the existence of all traditions. As technology, science, and business bring different nations closer to each other, cultural differences lose their importance. Wherever you go in the world, people eat hamburgers, wear jeans, play the same computer games, and listen to similar types of music. Even languages are not immune; they are filled with many foreign words.

People have two distinct attitudes about traditions, i.e., there are two different opinions about whether traditions should be kept. Some people believe that no tradition is worth saving. They believe that every place on earth will gradually become the same, and a global culture will emerge. Others think differently and want to preserve all traditions. They prefer to keep the world with a variety of different cultures in it. They think that it is possible for many different cultures to live together peacefully. To understand and respect each other and give others the right to be different, we must be more tolerant of each other's traditions. We can get a better understanding of traditions if we classify them into three groups: religious traditions, social traditions, and superstitions.

Religion is the source of many of our traditions. One example of religious traditions is holidays. In fact, the English word for holiday originates from "holy days"; that is, religious days. Many of the most important holidays, such as "Ramadan Bayram" and "Christmas Eve," are religious in origin. Other traditions like circumcision and pilgrimages also come from religion. A pilgrimage is a journey to a sacred place like Mecca or Jerusalem, the holy lands for Moslems and Jews. Many daily practices also depend on religion. For example, Moslems cannot eat pork, whereas Hindus cannot eat beef. Jews have many rules about food, whereas Christians have none.

There are many social traditions that originated long ago. No one remembers why we wear wedding rings on the fourth finger of the left hand. Similarly, we have forgotten why knives have round ends, why we use forks instead of chopsticks as the Chinese do, why men wear trousers in the West but dresses called "thobes" in Arabia or skirts called "kilts" in Scotland. Have you ever thought about why white is a symbol of purity in the West but of death in the East? There are thousands of details in our daily lives that started for reasons that we no longer know. Even the stories that we tell our children or the dances that we do at ceremonies have forgotten origins. In other words, many social traditions have historical origins.

Superstitions are traditional beliefs that we share with other people in our society about luck. Sometimes we try to avoid bad luck by avoiding certain things. For example, people do not walk under ladders or cross the path of a black cat. Many people try to avoid the number "13," so many hotels in the US will not have a thirteenth floor or a room number 13! Another example is knocking on wood to avoid bad luck. Many of these superstitions seem to be universal, whereas others are more local. People of the Middle East and the Balkans believe that a blue bead on a child's clothes will keep away bad luck or the "evil eye."

84 Arranged Marriages: An Alternative to Love Marriages

The system of arranged marriage in India was well established during the Vedic period and has been practiced very commonly by the vast majority of the population since then. Marriage is seen as a necessity in the life of a Hindu, and the unmarried person is considered incomplete and not suitable for participation in certain social and religious activities.

The practice of arranged marriage cuts across all caste lines, regional borders, and language barriers in India. Marriage is treated as an alliance between two families rather than two individuals. In the joint family arrangement, where several generations live together, the possible bride is evaluated on her suitability as part of the family environment — not only as a wife to her husband. Love is not viewed as an important element in mate selection. In fact, romantic love is regarded as an uncontrollable emotion which negatively affects the use of logic in decision making. Thus, mate selection by self-choice is seen as a danger to the entire joint family because it could lead to the selection of a spouse who is unsuitable in character or background. Gupta (1976) has estimated that Indian marriages based on love occur among less than one percent of the population. Crucial life decisions, such as choosing a mate, are generally determined by responsible members of the family. Therefore, they reflect the cultural emphasis on family life as opposed to freedom of the individual. However, it is thought that close ties and feelings of love will develop between the couple following marriage.

In urban areas of India, newspaper advertisements have become a convenient and acceptable method of finding a suitable spouse. In 1960, Cormack noted that the use of advertisements was growing in most big Indian cities. Eleven years later, Kurian observed that it had become an established "go between" for arranging marriages. These advertisements typically list the desirable characteristics of the young men and women. Studies by Kurian (1974) and Ross (1961) show strong sex differences in preferred qualities for males and females. In Indian culture, a male is highly valued for the social and economic status of his family, his educational level, and potential earning power. Personal qualities such as appearance and personality are not considered very important. In women, the following qualities are emphasized: moral character, beauty, ability to cook well and manage a home, and education.

Most research on modern family life in India suggests that there has been little change in the views of Indians toward marriage. However, Rao and Rao's survey of college students revealed a surprising fact: An increasing number of young adults in India wish to have more choice in the selection of their future wives or husbands, although they still let their parents arrange their marriages. Their findings

were also quite similar to those of Cormack, who also stated that the custom of forbidding a prospective couple from seeing each other until their wedding day is becoming out of date in most urban areas and among college-educated youth. They prefer to spend some time with their prospective husbands or wives before getting married.

85 Dowry and Bride Price

The economics of marriage has changed over time. In the past, families arranged marriages, and there was always some money or goods involved. The bride was expected to bring a "dowry", (i.e. a payment by the bride's family to the bridegroom's for marrying their daughter) of money, jewelry, animals, or something of large value to the marriage. The dowry was often used by the receiving family for business purposes, family members' education, or for the husband's sisters. Throughout history, the dowry has been used in many civilizations for different purposes. For example, in Ancient Rome, the dowry was a means of sharing the cost of starting a new family. In India, dowry was given as compensation to the groom's parents for the amount they spent in educating and upbringing their son. In China, wealthy parents gave some real estate or a couple of servant girls to the husband to guarantee their child a pleasant and comfortable life. Forms of dowry were common in Europe until the 19th century, but it declined and eventually disappeared with modernization.

In other cultures, the family of the groom or the groom himself had to pay a "bride price", or a marriage payment, to the bride's family for the right to marry their daughter. Another form was "bride wealth", which was the property given by the groom's family to the bride's family to compensate the loss of their daughter's services.

In some cultures, dowries and bride prices are still demanded. For example, in southern Sudan, the groom must give 20-40 cattle as a bride price. In both cases, the financial transaction takes place between the groom, or his family and the bride's family; the bride has no part in this transaction and often no choice in the marriage decision. It is the bride's family who has the final word.

86 Gender: What Makes Us Different From Them?

A few hours after Joy Fisher's birth, her parents took pictures of her. Joy's mother put a pink hair band around Joy's head, so that everyone who saw the pictures would know that the new baby was a girl. Even before she was born, Joy's parents knew that the baby was going to be female because they had had a sonogram. Joy's parents decorated her room in pink and white and told all their relatives and friends that their baby was a girl. Gifts soon arrived, including pink dresses and dolls. A few years later, Joy's brother, Tommy, was born. His room was painted blue, and he received toy cars and a football as gifts.

Both Joy and Tommy are growing up in a certain culture. They are learning what it means to be a girl and a boy in that culture. Their sex at birth, female and male, is now becoming a gender—a way of thinking, speaking, and acting that is considered feminine or masculine. Each culture has its own way of defining gender, and very early in life gender becomes a basic part of a person's identity.

According to Deborah Tannen, a professor at Georgetown University, gender differences begin early in life. For example, in the United States, boys and girls usually play in same-sex groups. Boys like to play with a large group of boys, and they compete with one another for leadership. Some are leaders; others are followers. Girls, in contrast, usually play in smaller groups. Sometimes they play with only one or two "best friends." It's important for most girls that other girls like them, and this is more important to them than winning.

Tannen has found that these differences are also reflected in the ways that children use language while they play. Boys often use commands when they talk to each other. For instance, when Tommy is the leader of the group, he might say, "You go first. Don't wait for me." As the leader, he tells them exactly what to do. But when Joy wants to influence her friends, she uses different forms of language. Instead of using commands, she will say, "Let's try it this way. Let's do this." This is how she tries to direct the other girls without sounding like a boss.

As Joy and Tommy grow up, they will continue to be different. At school, Joy's status will depend on her circle of friends. If her friends are popular, then Joy may enjoy high status as well. Tommy's status, on the other hand, does not depend on who his friends are at school. Tommy gains status through his own ability to play sports well or earn high grades.

Different ways of speaking are another part of gender. As adults, men and women sometimes face difficulties in their communication with each other. Studies of communication show that if a woman tells her husband about a problem, she will expect him to be understanding. She may be annoyed when

he simply tells her how to solve the problem. Similarly, a husband may be annoyed when his wife wants to stop and ask a stranger for directions to a park or restaurant. Unlike his wife, he would rather use a map and find his way by himself.

Language is also part of the different ways that men and women think about friendship. Most American men believe that friendship means doing things together, such as camping or playing tennis. American women, on the other hand, usually identify their best friend as someone with whom they talk frequently. Tannen believes that for women, talking with friends and agreeing with them is very important. Tannen has found that women, in contrast to men, often use tag questions. For example, a woman might say, "This is a great restaurant, isn't it?" By adding a tag question to her speech ("isn't it?"), she is giving other people a chance to agree with her. Unlike most women, men often speak more directly, giving direct commands such as "Close the door." Many women, however, use more polite forms such as "Could you please close the door?"

These differences seem to be part of growing up in a certain culture and following its rules of gender. If men and women can understand that many of their differences are cultural, not personal, they may be able to improve their relationships. They may begin to understand that because of gender differences in language, there is more than one way to communicate.

87 Is America Closing The 'Golden Door'?

America has always been a land of immigrants. With the exception of the native American Indian, there is no United States citizen who is not an immigrant or a descendant of an immigrant. Immigration into this continent started in the 1600s and continued nonstop and unrestricted until the late 1800s. To people in Europe and other parts of the world, where governments were often tyrannical, economies unpredictable, and food frequently insufficient, this 'new world' offered promise and hope, and thus, millions of them went there. Since the United States was a new nation with a massive frontier and very few people to shape it, immigration was encouraged. Vast amounts of land were available, and opportunities were limitless in the country. By 1882, however, the massive frontiers and open spaces were quickly filling up. A country that had once had room for all was full, or so its citizens thought. Passing restrictive immigration laws was their way of closing the 'golden door' on the constant stream of immigrants. With the passage of time, these laws became increasingly stricter, and by 1921, the first US immigration quota system had been brought in to allow only a pre-set number of immigrants to enter the country yearly.

Since the 1960s, the US Immigration and Naturalization Service (INS) has been quite successful in controlling the number of 'legal' immigrants entering the country each year. However, a rather predictable problem has resulted from the strict quota system: people's desires and needs to emigrate do not decrease just because a quota is imposed. Since the decision to emigrate is not an easy-one to make, once it is made, people are often persistent in their efforts to reach their destination. If they cannot reach it legally, then they often reach it illegally.

Illegal aliens have been a problem ever since the first immigration restriction was imposed, but the problem has never been as serious as it is now. Estimates of the illegal population range from two million to ten million, and this population is growing. The pressure this huge population of illegals places on the national economy is shocking. The hardest effect of this pressure on the US workforce has been on low-skilled American workers. Illegals often compete for jobs by offering to do the same work for far less pay and fewer benefits than American citizens. The economy is further worsened by illegal immigrants' use of false identification papers. Illegals are using false IDs at an alarming rate to benefit from services paid for by American taxpayers: Medicare, unemployment compensation, Social Security, etc. Such activities cost American taxpayers millions of dollars a year. In short, illegals are adding extreme pressure to an already over-burdened economy.

Economic problems caused by illegals are only the beginning of the problems. Ironically, the people who have suffered most are the legal immigrants. As the economy gets worse, and

unemployment rates rise, it is usually legal immigrants who cannot find employment. Moreover, it is often legal immigrants who are most seriously ridiculed because of the misconduct of illegals. America is quickly becoming an unpleasant place for immigrants to live. According to one congressman, "If necessary precautions are not taken, America may have to shut its doors altogether."

Solutions to such complex problems are not easy to find, and none are totally satisfactory. Some argue that the best place to attack the problem is at the borders. More intense controls at borders would certainly limit, to some extent, the influx of illegals. More sophisticated night cameras and newer and greater numbers of vehicles would help, but only partially. The United States shares such extensive borders with Canada and Mexico that it is virtually impossible to maintain control over them all.

EDUCATION

88 A Different Window

One of the most remarkable features of the theory of multiple intelligences is how it provides eight different potential pathways to learning. If a teacher is having difficulty reaching a student in the more traditional linguistic or logical ways of instruction, the theory of multiple intelligences suggests several other ways in which the material might be presented to facilitate effective learning. Whether you are a kindergarten teacher, a graduate school instructor, or an adult learner looking for better ways of finding self-study on any subject of interest, the same basic guidelines apply. Whatever you are teaching or learning, see how you might connect it with words (linguistic intelligence), logic or numbers (logical-mathematical intelligence), pictures (spatial intelligence), music (musical intelligence), self-reflection (intrapersonal intelligence), a physical experience (bodily-kinesthetic intelligence), a social experience (interpersonal intelligence), and/or an experience in the natural world (naturalist intelligence).

If you're teaching or learning about the law of supply and demand in economics, you might read about it (linguistic), study mathematical formulas that express it (logical-mathematical), examine a graphic chart that describes the principle (spatial), observe the law in the natural world (naturalist) or in the human world of commerce (interpersonal), or examine the law in terms of your own body (bodily-kinesthetic). For example, when you supply your body with lots of food, the hunger demand goes down; when there's very little supply, your stomach's demand for food goes up and you get hungry (bodily-kinesthetic and intrapersonal); and/or write a song or find an existing song that demonstrates the law such as Dylan's "Too Much of Nothing" (musical).

You don't have to teach or learn something in all eight ways, just see what the possibilities are, and then decide which particular pathways interest you the most, or seem to be the most effective teaching or learning tools. The theory of multiple intelligences is intriguing because not only is it fascinating but it also expands our horizon of available, teaching/learning tools beyond the conventional linguistic and logical methods such as lectures, textbooks, writing assignments, and formulas that are used in most schools. To get started, put the topic of whatever you're interested in teaching or learning about in the center of a blank sheet of paper, and draw eight straight lines or "spokes" radiating out from this topic. Label each line with a. different intelligence. Then, start brainstorming ideas for teaching or learning that topic and write down ideas next to each intelligence This is a .spatial-linguistic approach of brainstorming; you might want to do this in other ways as well. For example, use a tape- recorder, or have a group brainstorming session...Have fun!

89 Cooperative Kids

The concept of cooperative learning is alien to all of us who were taught the traditional way, but it offers our children the adventure of finding their own answers.

Di Ulford reports.

If you took a doctor from the 19th century and put him in a modern operating theater, he would have no idea what to do, but if you put a teacher from the 19th century into a modern classroom, he would be able to carry on teaching without pausing. Teaching methods have not changed much in one hundred years. The idea that students are empty containers which the teacher fills with knowledge remains the same.

Education consultant Alyce Miller says: "Cooperative learning does not work in today's changing world. We are not teaching creative problem-solving. We only encourage competition and believe that this brings out the best in people." However, this is not the case. Encouraging children to concentrate on getting the best marks destroys motivation and the fun of learning. She goes on to say that the teacher's role is no longer to feed students with information. "The facts are available in libraries, on CDs and on the Internet. Students need the skills to find this information, to use it and to think creatively in order to solve the problems of our world."

In cooperative learning classes, the traditional classroom physical layout is abandoned. Children do not sit in straight rows of desks facing the teacher, but they face one another to make it easier to share ideas. Students learn to work first in pairs, then in threes, and finally in groups of four. Students are required to participate actively in discussing and shaping their own knowledge. The teacher, who is still very important to the process, becomes the helper instead of the master.

Aarnout Brombacher, head of the mathematics department at Westerford High School, says: "The incorrect assumption that many people make about cooperative learning is that it is just group work. In fact, it is much, much more. Cooperative learning recognizes that students do not have the skills to work together. With this technique, most of the time in the classroom is spent teaching them these skills — life skills."

Brett Melville, a 17-year-old student at the school, says that students benefit from cooperative learning. He adds, "You learn the same material as you would using the traditional method, but this way you learn how to work with others at the same time. In our class, we are given enough time to discuss issues and problems in detail." He also mentions that it might take longer than simply listening to the teacher lecture, but the students remember much more afterwards.

One teacher, Lynne Gedye, has been using cooperative learning in her classes for two years. She says, "This year, we have several students in the class who cannot speak a word of English. I was feeling anxious, but there was nothing to worry about. The students' response was amazing. The strong students helped the weak ones endlessly so that they could participate in class activities too."

In short, it seems that cooperative learning turns the classroom from a competitive arena into a place where learning facts and life skills is both more fun and more effective for students and teachers alike.

90 The Trend Towards Home Schooling

Record numbers of children are being taken out of school and educated by their parents at home in Britain. Up to 100 children a month are leaving the classroom because of their parents' dissatisfaction with the education system. Around 15,000 families are now teaching their youngsters at home, a rise of 50 percent from last year, according to the latest figures.

The popularity of home schooling is mainly due to the rigidity of the examination system, parents being unable to get their children into the school of their choice, and disillusionment with the teaching methods. Some parents also prefer to keep their children at home because of bullying arid a lack of discipline in schools. Academics believe that schools could become obsolete within 20 years as parents turn to media technology, such as the Internet, to educate their children. Professor Meighan of Nottingham University says that as well as the schools, the teachers could also become obsolete in 20 years' time because children will be taught at home using the Internet, computers and video. He adds that teachers will take on a new role as advisors who sort through the available information. Regarding these possible changes in the education system, Sir Christopher Ball, the director of learning at the Royal Society of Arts brings up the issue of institutionalized schooling. He predicts that the education system of the future will include a global curriculum and a worldwide qualifications system.

6 years ago, Ms. Leslie Barson founded the Otherwise Club, which now comprises of 35 families around north London. Professional teachers are brought in where necessary to help the children with more specialized subjects, but for the most part parents and children work together. According to Ms. Barson the whole idea of educating children should be to develop their self-confidence. Her son, Luis, who is now teaching himself math, agrees with his mother and says: "I like the freedom to learn things that interest me, particularly music. I don't feel I am missing out on anything by not being at school because I am a member of various clubs and have friends who attend normal school."

Some educationalists, however, disagree with Luis and claim that home schooling could worsen children's relationships with others because of long periods spent with their parents. Most academics who are of this opinion fear that children could also become shy as they have limited contact with people other than their parents. Professor Michael Barber of London University has worked out a compromise to eliminate the possible negative aspects of home schooling. He thinks that children could spend half their time at home and half at school because they need to learn the rules of work in. a democratic society and learn to' deal with relationships with adults other than their parents, and this is only possible through experience in school.

91 Expanding Educational Opportunity

In the United States, education for young children is both free and compulsory. That is, the government must provide education for children without charging them money, and the children are required to attend school. This is always true for children in primary, or elementary school and for children in junior high school, or middle school. In high school, which is sometimes referred to as secondary school, education is free, but many states allow young people to stop attending school when they are sixteen years old.

80% of young people in the U.S. complete high school and get their high school diplomas. Many communities offer special programs in which those who have not completed high school can still get a high school diploma. These programs, called GED (General Equivalency Degree) programs, offer classes in the evenings. In the last few years, about half a million people a year have earned GEDs.

It is at the postsecondary level, after high school, that U.S. education offers the greatest variety and opportunities for almost anyone who wants to get more education. Modern society has become more complex, and so more trained people are needed to build and maintain that society. As a result, a new kind of school has developed in the last twenty or thirty years. That kind of school is the two-year college, often called a junior or community college. It provides postsecondary educational opportunities for people who have not been able to take advantage of them before. There are now more than 1,500 junior and community colleges in the United States, and about 5 million students are taking credit courses and programs in these places. This number accounts for about 40% of postsecondary students.

Two-year colleges offer several advantages over more traditional four-year schools. One is location. Most two-year colleges are located in larger towns and cities and are designed to serve the people who live in that area. Being close to the school saves money. These schools also cost less than four-year schools. Generally, tuition is about two to four times cheaper than it is at larger schools.

Another advantage of two-year colleges is that the classes are usually smaller and the faculty is more interested in seeing its students succeed than may be true at four-year schools. These facts, combined with the fact that the total enrollment is usually smaller, mean that the two- year college is often a more comfortable environment for study than a large university with big classes and professors busy with research.

The two-year college also offers greater access and opportunity. Many of these schools admit anyone who has a high school diploma or a GED. Easier entrance, however, does not mean that the education students receive is of poor quality. Two-year colleges offer Associate Degrees, and most of

their courses are accepted for transfer into four-year schools. Many students transfer even before they receive their Associate Degrees. Many four-year schools welcome students who have earned good grades at two-year schools; in this way, they provide opportunities to students who might not otherwise be able to get bachelors' and even graduate degrees

Finally, many two-year colleges offer fields of study that are not found at more traditional universities. Many colleges also have arrangements with businesses and industries in their area to provide training and even employment for their students.

One of the basic social beliefs in the United States is that as many of the country's people as possible should have opportunities to achieve their goals. The college system is one way that opportunity is made available to those who might not be able to take advantage of more traditional postsecondary education.

92 Exam Fitness

Research has .shown that success in exams depends on both physical and intellectual fitness. There is nothing that can replace studying, but keeping yourself in good physical shape will help you to remember and use what you have learned well. The following advice will help you to do your best at exam time.

Exercise

Many people believe that there are two kinds of. students: the healthy, popular type, with muscles and a low IQ (intelligence quotient), and the weak, unhealthy academics, who wear thick glasses and pass- all their exams. These people think that intellectual students are passive, and athletic people are not intellectual. That is, students are either intellectual or physical— they can't be both at the same time. However, this belief is not in fact true. Recent studies have found that students who take regular exercise generally do better at school than those who don't. For example, twenty minutes of aerobic exercise will immediately result in:

* improved performance in IQ tests

* a reduction in. stress

* better concentration

* faster, clearer, more creative thinking

* an improvement in your memory.

So try to do some aerobic exercise at least three times a week. But remember, as exercise makes you feel more energetic, it is better not to do it near bedtime because it could cause insomnia. And on the exam day, take some physical exercise before your exam starts, preferably outdoors.

Body Clocks and Sleep

Our bodies and minds are programmed to run to a particular timetable and our mental and physical abilities change a lot during a day. For example, concentration, memory and the ability to work with our hands, all reach a peak in the afternoon, but fall to a low level in the middle of the night. Our body clocks are set and kept in synchronicity by daylight, which also keeps us alert. Confusing your body clock will make you less alert and less effective.-Lack of sleep will . not stop a doctor from operating successfully or a pilot from landing a jet, but it will, affect a student's ability to read a book and remember things well.

Some points to remember:

* If you can't get up in the mornings and if you ask someone to wake you up, you 'are not getting enough sleep.

* You should sleep at regular times in order not to stop your body clock from working normally.

* You must get enough daylight. Study in a well-lit room, preferably near a window.

* The best times to study are between 9.00 a.m. and 12.00 noon, and the late afternoon between 4.00 p.m. and 6.00 p.m.

* The worst times are after lunch because your body clock slows down between 1.00 p.m. and 3.00 p.m., and also late at night. You may think you are more creative after 11.00 p.m., but remember that most exams take place during the day. Studying late at night will disrupt your body clock. In other words, your body clock won't be able to work-properly.

* A nap (short sleep) during the afternoon will help you study and could result in improved performance—just make sure you don't fall asleep during your exam.

Final Points

* Don't study more than four or five hours a day after school or other work.

* Don't study with the TV or radio on. It negatively affects your ability to understand what you're trying to learn.' The same is true for music that you are listening to while studying. You can't pay enough attention to what you are studying unless you choose music that is pleasant and relaxing.

* Study with a friend. It helps you feel less stressed because it helps you feel you aren't suffering alone. You see that there are other people who are having the same difficulties and problems as you.

ENVIRONMENT

93 A Terrible Conflict

When two of his closest friends were killed in a power struggle between Zapatista rebels and another indigenous group a few years ago, Domingo Perez Gomez decided that the peaceful village of Salinas-Cruz, where he had farmed for a decade, was no longer safe. He picked up his family and fled his village to live in the 320,000-hectare Montes Azules Reserve, the richest patch of virgin forest in Mexico. "It was the only place we could go," says the 48-year-old. "We had lost everything we had. All we wanted to do was work." As soon as they got there, they began to cultivate corn and black beans on a small piece of land in the forest.

Montes Azules contains 31 percent of Mexico's bird species and 28 percent of the mammal species —including an endangered jaguar. That meant Gomez and his family were a threat for the wild life. In December 2002, government inspectors showed up and accused them of illegally cutting down trees; threatening to arrest them if they didn't leave the reserve.

When the government kicks out illegal forest dwellers, as it did three times in 2000, these people often return. Green activists from Conservation International have tried to develop alternative ways to make a living for these people, including producing organic coffee for export. However, these farmers seem to resist this kind of change as they are not very familiar with these new ways. "We shouldn't cut the forest down, I agree," says Rosario Lopez, 24, a forest dweller. "But if we don't have any work, how are we going to survive?"

Environmentalists say the reserve is sinking fast. In the last 14 years, logging and intensive farming have stripped away 41 percent of the forest. Destruction of Montes Azules would be a disaster. Ecologists say the damage being done to the forest may be irretrievable.

Regardless of who is to blame, when the time comes it is usually the farmers who have to relocate. "It is a terrible conflict," says environmentalist Homer Arejis. "Determining what to do with these families inside the jungle has become a huge social problem." Gomez and his family now live in the dusty yard of a shelter, raising chickens. He is looking for work.

94 How The Greenhouse Effect Works

Many experts agree that the most pressing problem facing all of us today is the global warming of the earth's atmosphere. It is caused mainly by the build up of carbon dioxide and CFCs. The information we have now is that the atmosphere is getting warmer. In the past 80 years, the average temperature has increased by half of one degree Celsius. Weather experts think that the rate of increase in the warming process is accelerating. Some predict that, by 2090, the temperature in southern Britain on a typical summer's day could be 26-30°C. (In 1998, the highest temperature recorded was 24 ºC) This might be wonderful news for the British, who continually complain about the bad weather, but there would be a price to pay. Even a small rise in temperature could, scientists say, have a dramatic effect on ice in the polar regions. Pieces would break off, float away and melt. Sea levels would rise and Britain's low-lying coastal regions would be flooded if sea defenses were not built. However, the effect of higher temperatures on other countries could be even more severe. Hot countries which are already suffering from droughts could get even hotter and more arid.

What have we done to produce this warmer climate? We've burnt fossil fuels (coal, gas and oil), cut down trees faster than they're replaced, used aerosol sprays and bought food packages in rigid-foam containers. We've also used refrigerators and freezers with CFC coolants. Burning fossil fuels uses oxygen and produces carbon dioxide whereas growing trees use carbon dioxide and produce oxygen. This creates a healthy balance on the earth. However, since the industrial revolution—about 150 years ago—that balance has been upset because more fossil fuels have been burnt and forests cut down at an unprecedented rate. Both produce carbon dioxide. The result is that carbon dioxide in the atmosphere has increased 24% over the past 150 years. Some carbon dioxide is essential to life to help plants grow and to retain some heat but the very large amounts are responsible for trapping even more heat in the earth's atmosphere, which is called the greenhouse effect. Other important 'greenhouse gases' are CFCs especially the types which have been used in aerosols, some food trays, domestic freezers and refrigerators, supermarket refrigeration systems and most air conditioning systems. Some CFCs are at least 10,000 times more powerful than carbon dioxide in trapping heat in the earth's atmosphere.

95 The Japanese Way Of Dealing With Trash

The Japanese are better than the Americans when it comes to generating and getting rid of trash. Each person in Japan produces 1.9 pounds a day, compared with 3.5 pounds in the United States. Since the tiny country has even less land-fill space to dump rubbish than the United States, necessity has led to a sophisticated system for handling trash. The key difference is that while the Americans believe there is a single solution to the garbage crisis, the Japanese realize that burning, burying, recycling and reducing each has its place.

For the Japanese, the solution of choice is recycling. In Tokyo, enterprising firms have traditionally toured neighborhoods, collecting newspapers, magazines and rags (worn or worthless pieces of cloth) in exchange for new bathroom and facial tissue. Button-shaped batteries, containing toxic mercury, are returned to stores to be recycled. Although only a few years ago no Japanese would touch used goods, the latest tendency is garage sales and flea markets, which give secondhand goods new life. About 40 percent of solid waste is recycled. This includes half the paper, about 55 percent of glass bottles and 66 percent of food and beverage Cans. Some towns go further. Residents of Zentsuji separate trash into 32 categories, from paper and glass to rags and appliances.

Since the early 1970s, officials have strictly enforced compulsory separation of burnable from noncombustible trash. Burnable waste, 72 percent of the total trash, is trucked to incinerators (furnaces for burning waste), which reduce it in weight and volume by at least 80 percent. Every Japanese community has its own incinerator or access to one nearby (there are 1,899 garbage - burning plants, compared with the 155 large incinerators in the United States).

Yet, Japan has not solved the problem of garbage efficiently. The overall recycling rate peaked at about 50 percent in the 1970s, but dropped during the 1980s. The country still makes too much of the stuff. Gleaming appliances and used furniture are thrown away, and it's impossible to buy even a pencil without the salesclerk wrapping it. Partly as a result, Tokyo and three neighboring towns will have an excess of 3.43 million tons of garbage by 2010, and may have to ship it elsewhere. To avoid this, the government will probably promote greater recycling and changes in consumption patterns and reduce the amount of trash that its citizens generate. Garbage is one Japanese export without a market.

96 Cyclones—The Killer Storms

Weather is one of the many forces of nature over which mankind has little or no control over. It sometimes produces a disaster; crops are destroyed, buildings are flattened, and land is washed away by powerful storms called cyclones, typhoons or hurricanes. Let us look at these tropical storms, the damage they cause and the precautions, if there are any, which may reduce that damage.

Tropical storms, which are called hurricanes in the Atlantic and typhoons in the Pacific, are very severe storms with wind speeds exceeding 115 kph (kilometers per hour). Cyclones and other tropical storms do not occur in all parts of the world but are confined to latitudes 5° to 30° both north and south of the equator. Although the frequency of such storms varies from year to year, it averages about six per season. This season lasts from June to October in the northern hemisphere. Cyclones only form over water which is at least 37°C. In the early stages, cyclones behave just like ordinary storms. They start with winds coming in to fill an area of very low air pressure. As the winds approach the center of this area, they begin to turn anticlockwise in the northern hemisphere and clockwise in the southern hemisphere due to the earth's rotation. The warm air currents, or winds, flowing towards the center pick up huge amounts of moisture, or water vapor, from the warm water below. Winds with speeds high enough to be called cyclones develop in the course of a few days. A cyclone generally moves towards the west until it hits land. During this time, the whole storm may be traveling at a speed of 25 kph or less. When the storm hits land it usually curves up to higher latitudes and begins moving eastwards. At this stage the cyclone's forward movement accelerates to 40 kph or more until it loses strength and is no longer considered a cyclone. Cyclones pass by any particular place in a few hours.

During its passage, a cyclone causes immense damage. Besides breaking trees, cyclones can knock down walls and lift the roofs off buildings. The pressure on the walls of buildings can exceed 400 kg/m2—enough to flatten any non-strengthened structure. The wind speeds become faster at the center of the storm, which is called the 'eye'. If the eye of the storm passes over a weather station, the instruments which measure wind speeds and pressure may not be able to withstand these huge winds, so proper measurements are often not possible. The damage caused by a cyclone depends largely on how close the eye of the storm passes over densely populated areas and how flat the land is.

The damage from cyclones is not limited to the winds. Cyclones come together with torrential, i.e. heavy, rains which cause rivers to overflow their beds and flood flat land. Furthermore, the storm raises the sea level by about three meters, so the rivers cannot flow out to sea. Often cyclones are accompanied by extra high seas called "storm surges". These surges, or huge waves, reach far inland over flat areas. Bangladesh is one such area which has suffered storm surges repeatedly. In 1970, a

surge swept over Bangladesh eventually killing over half a million people. This number was due to drowning and also to the disease and starvation that resulted after the cyclone destroyed the crops there.

Unfortunately, there are few precautions that can be taken to lessen cyclone damage. We can, however, inform people about the potential cyclones due to their constant monitoring by weather satellites. Flooding may be further reduced by building sea walls. These walls must be higher than the sea surge in order to protect the flat areas behind them. There is a sea wall in Texas, which was built after a storm surge killed 6,000 people in 1900 and caused a lot of damage. When another hurricane hit in 1915, only 275 lives were lost. There are sea walls like this in other places but their huge cost prevents many countries from constructing them. Although we can take some precautions to reduce the damage and loss of lives during severe storms, like all of nature's most powerful forces, we can do nothing to prevent cyclones.

97 Energy Efficient Vehicles

Each year, 65% of the petroleum consumed in the world is used for transportation. As a result, vehicle emissions have become the leading source of air pollution today. However, recent advances in technology are helping increase fuel efficiency and reduce toxic substances which vehicles discharge into the air.

One way to improve vehicle performance and, at the same time, reduce emissions is to make changes in the composition of petroleum-based fuels, like gasoline and diesel fuel. Such new types of gasoline are developed using improved methods and they contain fuel additives to increase the oxygen content. This decreases harmful emissions such as carbon monoxide. Moreover, new diesel fuels which have lower sulfur contents or which are produced from clean-burning natural gas help vehicles with diesel engines achieve lower emissions.

In addition to advanced petroleum-based fuels, researchers are rapidly developing alternative fuels, such as electricity, ethanol, natural gas, and propane, which reduce or entirely eliminate harmful emissions. In the future, scientists will probably generate these fuels from renewable resources; for example, ethanol from corn or electricity from wind energy. However, this is not possible for some fuels' such as natural gas and propane.

In an effort to increase fuel efficiency and to decrease air pollution, researchers are also making improvements in vehicle design, components, and materials. Alternative Fuel Vehicles (AFVs), which can either alternate between two fuels or operate on a mixture of two fuels are now available. In addition, recent developments in both AFVs and petroleum-based vehicles may double or triple the efficiency of current vehicles. Some of these new technologies include electric vehicles, which combine an engine with an electric motor, and fuel cells, which produce electricity by converting a fuel into water.

Two basic issues motivate the research into advanced fuels and vehicles. These are the dependence on imported petroleum and the increase in air pollution caused by vehicle emissions. Governments in many developed countries have set aside huge sums of money from their national budgets for research in these areas. Some governments have also passed laws to encourage businesses and individuals to purchase AFVs, although there is not much they can do about the existing old-technology vehicles which people still use. In the course of time, however, everyone will be using AFVs as there will be no other type of vehicle on the market.

98 Waste Disposal Crisis

People have been throwing out trash ever since they were cave men. In fact, by looking through trash, archeologists can tell us a lot about the material wealth of people. Scientists who study the people of the 20th century will be particularly lucky because no civilization so far has thrown out so much as ours. Actually the amount of trash or garbage that we have is starting to become a serious problem. Up to now, we have just thrown away what we no longer wanted in large dumps at the edge of towns and cities. Then, it was either burned or buried so it did not smell or become an eyesore. We did not need to worry about dumps: they were far away from populated areas so most people were never even aware of them. However, with the rapid increase in population and the outward spread of cities, the dumps which we used in the past are now found near residential areas. They have become a threat to our health and to the environment. Thus, we have to apply more modern methods to produce disposal in big cities or find ways to reduce the waste that we produce.

In big cities like London and New York, which have had large populations for a long time, city officials have had to build more modern dumps which are called landfills. These are not just an open hole in the ground but are specially designed to cause as little harm as possible to the environment. They usually consist of several different layers. The bottom layer is made of clay and plastic so that the chemicals that leak out of the garbage do not enter the ground and thus pollute the ground water near landfills. Next, a pipe system is laid down. This will take the resulting chemical leakage to a treatment center. The trash is then dumped on this prepared area and as it fills up the area, it is covered with soil so that birds cannot reach it and the area does not smell. Since garbage produces methane gas as it decomposes, there are usually pipes which run vertically through the layer to collect it. Unless the methane gas is safely conducted away, it may explode. When the landfill is full, it is covered with thick layers of soil and after a while the land may be used as a site for a park or other open space. In this way, we can reclaim the use of the land without risking the health of the people there.

The amount of waste that a society produces seems to be determined by the level of economic development. The richer the country is, the more trash it produces. In Third World countries, a single individual produces less than half a kilogram of waste each day whereas in the developed world, each person can generate 1.8 kg. of garbage daily. A typical American throws out 590 kg. of garbage a year and 38 kg of plastic. Every year 220 million trees are cut down to make U.S. newspapers, 70% of which eventually ends up in landfills. For this reason, the landfills in America are huge. For example, the Fresh Kills Landfill in New York has 25 times the volume of the Great Pyramid in Egypt and

receives 17,000 tons of garbage daily, six days a week! Due to their huge size, it is difficult for governments to find new sites for landfills as they lose their capacity to hold more waste.

It is possible to reduce the amount of waste that we produce in several ways. The amount of paper packaging on products that we buy could be reduced. Most products have two or three layers of packaging, including plastic bags, plastic trays, and cardboard boxes. Another way would be to separate old newspapers from our trash and use them to make new paper instead of cutting down so many trees for that purpose. This would further reduce the need to cut down forests. In addition, we can recycle the glass and metal that we throw out. By using separate bins for paper, bottles and metal containers, we could reduce the amount of waste that we produce by 80%. Similarly, old cars and machines could be used as scrap metal and thus reduce the need for mining so much metal ore. These things are very easy to do and yet most of us do not do them. We need to make everyone aware of the trash crisis. The governments must help us to recycle by providing separate bins for collection at convenient places.

99 Recycling

Julie Lewis from Oregon, in the United States, is wearing an expensive-looking pair of boots. They are durable, i.e. long-lasting, and also fashionable. When you look at them you can't realize that they are made entirely of' recycled materials. Julie owns her own shoemaking company and has achieved a long-term dream to turn waste into something useful. The shoes are made from all sorts of used materials, which include textile scraps (waste pieces of materials), rubber from tires, and plastic bags. Although she thinks that something has to be done before it's too late, Julie knows that she cannot solve the world's environmental problems single-handed. For such important issues, she needs support from others but still she feels she is doing a good job at a local level.

Recycling has become extremely popular in the US, particularly in recent years when the number of recycling schemes—organized plans—has increased by 500 percent. 65 percent of aluminum cans are recycled in addition to 25 percent of paper and 20 percent of glass. The interest in re-using materials has come from the realization that Americans produce far more waste per person than most Europeans; a total of 200 million tons a year. For example, this is twice the amount of waste produced in Germany and it is enough to fill a line of garbage trucks stretching eight times around the world.

America even exports its waste. Taiwan buys used paper to make more paper and Japan uses American scrap metal to produce new cars, which it then sells back to the US. Two thirds of the remaining waste is buried in landfill sites. Getting rid of waste is a major problem. Landfill sites can cause pollution of water supplies. As sites fill up, new ones need to be found. Some rubbish is burnt, but this pollutes the atmosphere. The obvious solution to this problem, then, is to recycle more. Recycling is already a big business—Julie Lewis being a perfect example. Her company has already attracted millions of dollars worth of investment. Recycled products are no longer seen as poor quality goods, but as useful alternatives.

A hugely successful plan has been operating in Palm Beach County since 1988. Rubbish is sorted into different categories. Paper, glass and plastic are sold to recycling firms. Kitchen waste is used to operate a generator which supplies electricity to 30,000 houses. Other materials are used- to make soil, which is then used for growing fruit and vegetables.

There are arguments against recycling, in spite of the fact that it is environmentally friendly. Although many people show great interest in recycling schemes, it can be expensive to run them. As Lynn Scarlett, a government adviser from Los Angeles argues, it is not economical to transport materials for recycling from areas which still have a lot of landfill space.

Manufacturers in Germany are trying to solve the problem at the production stage. Thus, they mainly look at how their goods are packaged. Soap powders are now more concentrated and packed in small containers, toothpaste tubes are sold without boxes and plastic wrapping has been reduced.

In a time when newspapers and TV news bulletins are filled with depressing stories of environmental disasters, it is important to remind people, especially children, that they can improve the situation.

100 Jojoba Oil Could Fuel Cars And Trucks

An oil frequently found on your bathroom shelf may prove a possible alternative to diesel fuel for cars and trucks. Early tests show that jojoba-fuelled engines release fewer pollutants, run more quietly and for longer, and perform just as well as diesels.

The search for alternative fuels, driven by shrinking oil reserves and concerns over exhaust emissions, has led researchers to investigate more enduring sources such as vegetable oils. Sunflower oil and soybean oil have both been tested as potential fuels. Now it is jojoba's turn. Jojoba is a desert plant that can reach up to 4.5 metres high and typically lives more than 150 years. The non-toxic oil is widely used as a non-greasy skin-smoothing ingredient in cosmetics.

Engineers think the oil has potential as a motor fuel because it releases a lot of energy when it burns and is chemically stable at the high temperatures and pressures in a working engine. To test jojoba in engines, Mohamed Selim and his colleagues at the United Arab Emirates University in Al-Ain and at the Helwan University in Cairo, connected sensors to a diesel engine and monitored its performance while burning regular diesel fuel and jojoba oil respectively. The results showed that jojoba is worth pursuing as an alternative fuel because it contains less carbon than fuels like diesel, which means lower emissions of carbon monoxide and carbon dioxide.

Selim says, "Jojoba can be grown in hot climates, salty soils and deserts. The use of jojoba as a fuel needs huge quantities of seeds, so it needs to be cultivated in huge amounts, which is easy in the desert lands in many countries". The plant has been grown for decades in south-western America and north-western Mexico. Jojoba plants are now cultivated throughout South America and in several Middle East countries. Farmers in Egypt have already started planting them specifically to use the nut oil as a fuel.

ECONOMICS

101 Spice Trade

The marketplace of today is full of products from all over the world. Everything — from Mediterranean olive oil to coffee from South America to pineapple from the tropics — is available on grocery shelves. People have always been willing to pay for special things that taste good. What people demand, business people will supply.

The demand for spices has had a great effect on the history of the world. The spice trade began before history was written. There is still evidence of a route that spice merchants used for crossing Asia in prehistoric times. The spice trade has affected world history because it forced people from different countries to communicate. Traders used to be the main source of ideas and information from foreign countries. Arab spice traders, for example, probably brought the first news of Asia to the Middle East. They probably introduced the Middle East to spices as well. Spices such as cinnamon have been used in the Arabian Desert since at least 2,000 BC. Arabs sailed from the southern part of the Arabian Peninsula to the island of Sri Lanka, near India. In Sri Lanka, they met Chinese traders who had already sailed around the South China Sea, trading Chinese foods for spices. The Arabs traded their own products for the spices that the Chinese had obtained. This early spice trade brought people of different parts of the world closer together. In order to trade, they had to communicate. The traders saw people who lived in ways very different from their own. They traded, or exchanged, ideas and information as well as products. Furthermore, when they returned to their own lands, they took the new ideas and information with them. Their own people learned about other lands and people by listening to the traders' stories.

Arab traders had a monopoly on the spice trade for centuries because they were the only people who supplied spices to merchants. They controlled the spice trade for a long time. Eventually, the Arab monopoly ended because merchants from other countries began to trade in spices. However, the demand for spices was still greater than the supply. Therefore, both the Arabs and the other traders made money from their business. Many of them became rich. Many governments became rich, too. For example, the government of Venice became rich from the money that traders and merchants had to pay it for permission to sell spices. The spice trade was a good business, so European traders and governments wanted to enter the trade, too.

The Europeans knew that the only way they could compete with Middle Eastern and Mediterranean spice traders was to find a short route to the source of the spices, the countries where spices were produced. First, the Portuguese tried sailing around the African continent to reach the source of the spices. However, this journey was long and difficult. The investment of time and money

was not worthwhile. The amount of time and money that the trip took caused the spices to be very expensive. Merchants could buy spices more cheaply from the Middle Eastern and Mediterranean traders than from the European traders. The Europeans had to find a better route in order to be able to compete with the other traders. The motive for the voyages of Christopher Columbus in 1492 and of John Cabot in 1497 was to find a shorter route. However, their journeys across the Atlantic Ocean brought the Europeans knowledge of the American continents, not spices. Their discoveries affected the history of the world.

The spice trade made the world both larger and smaller. It made the world larger because it increased people's knowledge of their world. They learned about countries that were different from their own. The spice trade made the world smaller because it encouraged people to communicate. When people communicate, the distances between them seem to become shorter.

102 So You Want To Be A Millionaire?

There is no specific formula you can use to become a millionaire. At school, we are told that receiving a proper education is all that we need to do well in society. However, a recent study by Professor Gary Cooper of the University of Manchester has proven this wrong. Professor Cooper studied the lives of successful entrepreneurs and discovered that 60 percent left school early, either due to expulsion or boredom. Other studies show that there is little connection between how well children do at school and the success they achieve as adults.

At the moment, there are 95,000 millionaires in Britain alone. Those who recently became millionaires come from a wide variety of backgrounds. The easiest way is to start out wealthy. In a survey of the richest 200 people in Britain, more than 50 percent inherited money. Twenty-five per cent of those who head large corporations were born into wealthy families.

If you are not born wealthy, you may be able to take advantage of your good looks. Dr. Raymond Bull of Portsmouth University says that good looks make early life easier. He then adds that people expect a good-looking person to be kinder and more efficient. However, don't be surprised if you find yourself employed as a decorative figure due to your good looks, while your less attractive colleagues are moving up the career ladder.

Professor Cooper divided successful people into two categories: the entrepreneurs and the intrapreneurs. The former often left school early and had several business disasters. However, in general, they are very determined people. The latter, on the other hand, have risen up through the levels of organizations. They are the children everyone thought would do well. Over half of them went to universities. They are good organizers and get on well with people. One dramatic difference between Cooper's two groups is that many of the intrapreneurs felt that they had been the victims of discrimination early in their lives. This has not been the case for entrepreneurs.

Nonetheless, even if you were born poor and lack good looks, there is still plenty you can do to improve your chances of success. There are many self-help manuals available to help you reach the top. There is even a magazine called Personal Success, filled with ads for courses that will transform your thinking and behavior. Most of today's courses on positive thinking originated in the United States. Many start by emphasizing the importance of self-belief and its role in being successful.

All these methods are the result of the fact that the old idea of a career ladder leading to success in big corporations no longer applies. There is much greater emphasis on personal development. However, what none of these methods do is to look at the quality of your life or consider whether the

price of success is too high. Most entrepreneurs are anxious people who are not strangers to self-destructive behavior. Twenty-five percent of top executives are unhappy with the long hours they have to work and the destructive effects this has on their family life. It seems that true success turns out to be based on more than motivation. There is a need for harmony, creativity, and healthy relationships.

103 Global Trade

For the first time in history, almost the entire world is now sharing the same economic system. Communism began to fall in the late 1980s and since then, capitalism has spread to most corners of the world. The basis of a "pure" capitalist economy is free trade, also called "open trade." There are benefits of open trade for both rich and poor countries. For developed countries such as Japan and England, free trade brings with it more competition, which, in turn, brings advantages such as lower prices and more choice of products for consumers. For developing countries, open trade means that people have much easier access to essential goods such as food, clothing, and fuel than before. An open economic system can be a key to improving the lives of people in both poor and rich countries because it can curtail poverty and improve living conditions.

This is apparently very good news. Optimists often say that "a rising tide lifts all the boats." What do they mean by this? Imagine a harbor filled with boats—some small ones, some medium-sized, and some huge ships. As the ocean tide comes in every eight hours, the water rises and literally lifts all the boats— both large and small. In economics, this expression means that in good economic times, poor countries benefit as much as rich countries do. However, pessimists point out that many of the "small boats" seem to be "leaking"—have holes in them—and so are going down instead of up. In other words, the gap between the rich and the poor—the economic difference between them— is wider than it was in the past. The contrast can be startling. According to The Nation magazine, "the wealth of the world's 200 richest people is greater than the combined incomes of the poorest 41 percent of humanity."

Why is this happening? What is causing this widening gap between the rich and the poor? Many of the poorest countries are at a disadvantage because of geography, which is the root of several problems. First, a country that is landlocked, with no access to an ocean or sea, has a disadvantage because it cannot easily transport its products to other parts of the world. Second, many—but not all—countries in tropical regions (near the Equator) have the disadvantage of heavy rains that often wash nutrients from the land. Without these nutrients in the soil, agricultural development is more difficult. Another obstacle for many countries is the problem of infectious diseases such as malaria and dengue fever, which are found only in tropical climates. It goes without saying that people with disease cannot contribute to the economy of the country.

Another cause of the growing gap between rich and poor countries is protectionist policies. In other words, many rich countries have governmental plans that give special help to their own people, so trade isn't actually completely "open." One example of a protectionist policy is an agricultural

subsidy[6]. Unfortunately, governments in poor countries can't pay these subsidies to their farmers. Therefore, farmers in rich countries have a competitive edge in the global market. Other protectionist policies are "hidden." For example, a rich country might say its trade is open. However, it will not buy products from a poor country. Why? It says that the poor country does not have high enough health or safety standards.

It may sound as if the situation is hopeless for developing countries ever to have a competitive edge in global trade—but perhaps not. East Asia, for example, has found far more economic success than Africa has. The key to success seems to lie in each government's economic policy. Malaysia, Indonesia, and Thailand have the same tropical climate as many African countries, but their economies —unlike those of Africa—are growing fast. Their governments have created an economic climate in which people can move from agriculture to manufacturing. Geography is not as terrible an obstacle to manufacturing as it is to farming. To help new entrepreneurs, these governments pay careful attention to areas such as infrastructure (harbors, railroads, and so on) and telecommunications. In other countries, such as India, information technology is driving the economy. Computer technology doesn't depend on geography, but it does require educated workers. Therefore, education must be a priority. In addition, governments of developing countries must work with developed countries and persuade them to drop protectionist policies. Clearly, it is possible for governments to prepare a path out of poverty in even landlocked, tropical countries.

[6] Agricultural subsidy: Money that the government gives farmers so that they can sell their products at a low cost.

104 Had They Expected The Global Economy To Take Their Jobs?

The growth of the global economy is leaving millions of workers in the lurch. Inequality, unemployment and poverty are all signs of this. Rapid technological change and heightened international competition are damaging the job markets of the major industrialized countries. At the same time, various pressures are limiting governments' ability to respond to the crisis. Just when workers need help most, the state is letting them down.

This is not how things were supposed to work. The failure of capitalism to distribute wealth is a challenge not only to politicians, but to economists as well. Despite a continuing growth in international trade and finance over the past decade, productivity has decreased, while inequality in the United States and unemployment in Europe have increased. In Western Europe, the unemployment figures are frightening. For example, in France and in Belgium, the unemployment rate now is four times as high as it was between 1969 and 1973.

The Europeans have created a lost generation of workers, who feel insecure about their future. Europe is now suffering from it in terms of increased crime, drug addiction, violence against immigrants, and the increasing popularity of extremist political groups. The big question is why it is happening. Three basic explanations of the problem have been suggested.

One of these puts the blame on the relationship between developed and developing countries. Historically, developing countries provided the industrial world with raw materials in exchange for manufactured goods. Nowadays, over 60 per cent of such goods, from clothing to consumer electronics, are produced by these countries. The reason for this is that labor is cheaper in developing countries, with the result that workers in developed countries have less and less to do.

Some economists assert that technology must be responsible for this problem. According to this school of thought, the introduction of new technology means that there's less and less for assembly line workers to do as their jobs are being done by computer. These economists also emphasize the fact that the new technology does create new jobs and businesses, but only for skilled workers who know how to use a computer. These factors lead to an increase in the unemployment rate among unskilled workers.

The final explanation is immigration. The legal immigration of skilled workers actually helps the economy as it supplies talents that are needed, creates businesses and jobs, and raises output. On the other hand, the increase in the number of unskilled workers has forced down wages in many European

countries. The immigrants' presence has also created an environment of crime resulting from feelings of hatred, as is already evident in parts of Western Europe.

It seems that retraining workers would be the key to solving the problem of unemployment and unequal pay in Europe, but the trouble is that while more training programs are needed, there is less and less money available to fund them.

The starting point for any positive policy would be to make it each nation's goal to improve the lives of its citizens. This means that economic policies should be structured so that working people can earn a living wage.

105 History Of Economics

It is believed that the subject of economics first appeared in early Greek times. The reason for this belief is that the first writings on this subject were by Plato and Aristode. Later, such Romans as Cicero and Virgil also wrote about it. However, there is no data showing the economic system during these times. The first known economic system was in medieval times, when the system of feudalism dominated. In feudalism, there was a strict class system consisting of nobles, clergy and the peasants. There was a series of nobles that were the holders of various sized lands. On these lands was a series of manors. These lands were similar to large farming tracts in which the peasants or serfs worked the land in exchange for protection by the nobles.

Later, the system of mercantilism predominated. It was an economic system of the major trading nations during the 16Ih, 17th, and 18th centuries, based on the idea that national wealth and power were best served by increasing exports and collecting precious metals in return. Manufacturing and commerce became more important in this system.

In the mid-eighteenth century, the Industrial Revolution ushered in an era in which machines instead of tools were used in the factory system. More workers were employed in factories in urban areas rather than on farms. The Industrial Revolution was fueled by great gains in technology and invention. These also made farms more efficient, although fewer people were working there. During this time the idea of "laissez faire", which means that economies work best without lots of rules and regulations from the government, became popular.

In the nineteenth century, there was reaction to the "laissez-faire" thinking of the eighteenth century due to the writings of Thomas Malthus. He felt that population would always advance faster than the science and technology needed to support such population growth. David Ricardo stated that wages were at a poor or subsistence level for most workers, rather than at a high or affluent one. John Stuart Mill provided the backdrop for socialism with his theories that supported farm cooperatives, labor unions and less competition. These theories were brought to a high point by Karl Marx who condemned the capitalistic "laissez-faire" theories of competition and instead favored socialism which marked more government control and also favored state rather than private ownership of property. Another important change at this time was in how goods were valued. Formerly, items' prices had remained steady, but at this time the value of an item came to be determined by the number of people wanting the item (demand) and the amount of the item available (supply). In fact, this is still valid in today's economic systems.

In the first half of the twentieth century, John Maynard Keynes wrote about business cycles - when the economy is doing well and when it is in a slump. His theories led to governments seeking to put more controls on the economy to prevent wild swings. After World War II, emphasis was placed on the analysis of economic growth and development using more sophisticated technological tools.

In recent years, economic theory has been broadly separated into two major fields: macroeconomics, which studies entire economic systems; and microeconomics, which observes the workings of the market from the perspective of an individual company, person or a group within an economic system. In the later twentieth century, ideas such as supply side economics, which states that a healthy economy is necessary for the health of the nation, and Milton Friedman's idea that the money supply is the most important influence on the economy, began to gain popularity. In the twenty-first century, the rapid changes and growth in technology have spawned the term "Information Age" in which knowledge and information have become important commodities.

PSYCHLOGY

106 Does Honesty Always Pay?

What exactly is a lie? Is it anything we say which we know is untrue? Or is it something more than that? For example, suppose a friend has been on a diet for a while. When she sees you, she excitedly asks, "I have become thinner, haven't I?" and you say, "Yes, definitely." In fact, you cannot notice any difference, but you know that she is obsessed with her weight and you don't want to hurt her feelings. Well, is this really a lie?

Professor Jerald Jellison of the University of Southern California has made a scientific study of lying. According to him, women are better liars than men, particularly when telling a 'white lie,' such as when a woman at a party tells another woman that she likes her dress when she really thinks it looks awful. However, this is only one side of the story. Other researchers say that men are more likely to tell more serious lies, such as making a promise which they have no intention of fulfilling. This is the kind of lie politicians and businessmen are supposed to be particularly skilled at: the lie from which the liar hopes to profit or gain in some way.

Research has also been done into the way people's behavior changes in a number of small, apparently unimportant ways when they lie. It has been found that if they are sitting down at the time, they tend to move about in their chairs more than usual. To the trained observer, they are saying 'I wish I were somewhere else now.' They also tend to touch certain parts of the face more often, in particular the nose. One explanation of this may be that lying causes a slight increase in blood pressure. The tip of the nose is very sensitive to such changes, and the increased pressure makes it itch.

Another gesture which gives liars away is what the writer Desmond Morris in his book *Manwatching* calls 'the mouth cover.' He says there are several typical forms of this, such as covering part of the mouth with the fingers, touching the upper-lip, or putting a finger at one side of the mouth. Such a gesture can be interpreted as an unconscious attempt on the part of the liar to stop himself or herself from lying.

Of course, such gestures as rubbing the nose or covering the mouth or squirming about in a chair cannot be taken as proof that the speaker is lying. They simply tend to occur more frequently in this situation. It is not one gesture alone that gives the liar away but a whole number of things, and in particular the context in which the lie is told.

107 Anxiety And Phobias

Anxiety and fear are normal human emotions and are often found as reactions to stress. Stress is a difficult word to define because it includes both the things that make you anxious, such as working too hard or becoming ill, and your reactions to them. Normal anxiety is what we feel when we are exposed to external stresses such as losing a job, having difficulties in marriage, or our children getting ill. This type of anxiety is often called worry and remains with us until the problem is dealt with in some way. When anxiety occurs in response to a more immediate threat, like being attacked by a huge snarling dog or looking over a cliff edge, it is called fear. Normal anxiety becomes abnormal when the symptoms are so painful and distressing that they stop us from coping well with daily activities. Abnormal fears, sometimes called phobias, are intense fears of things which would not make the average person frightened. If we are terrified even by a little Pekinese dog sleeping in the corner of a room, or won't climb down even a short flight of stairs as the height bothers us, then we have a phobia.

When we are anxious, it shows in our minds and bodies. We cannot concentrate, we are irritable and easily distracted, and we become inefficient. We tend to sleep badly and get tired easily. The body shows the effects of anxiety by more powerful heartbeats (palpitations), tension and pains in muscles, sweating, dizziness, and indigestion. These symptoms are easily mistaken by anxious people for evidence of serious illnesses, like heart disease or cancer, and so they feel even worse.

Sudden unexpected surges of anxiety are called panic and are often so unpleasant that people can become fearful of having panic attacks. When anxiety and panic are accompanied by some depression, we feel sad, lose our appetite, and the future seems hopeless. A phobic has symptoms of intense anxiety or panic, but only in particular situations. The dog phobic is OK away from dogs, the height phobic is fine on the ground floor, the social phobic has no fear away from other people, and the agoraphobic feels much better at home. Phobias lead to avoidance of the things which are feared. Avoidance may not be easy—we can never be sure that a dog isn't lurking round the corner! Phobics usually know there is no real danger and may feel silly about their fear, yet they are unable to stop it. Some people's phobias are associated with repetitive obsessive thoughts that engage their minds. They might worry all day that the bump they heard while driving the previous day was a pedestrian they had knocked down, and then repeatedly retrace their route looking for the corpse, and ring police stations to ask if the body has been found. Or each time they leave home, they might have an urge to check that all the windows and doors are locked, not once but dozens of times, so that they are hours late for work or social engagements.

People under stress due to anxiety, fears, and obsessions often cope with them well if they recognize what causes them and realize that they will not last. Thus, someone about to take a driving test can be extremely anxious but knows that the feeling will go away once the test is over. If the symptoms continue, though, help is often sought. Some people delay seeking help because they are afraid that they might be regarded as "mad". In fact, people with anxiety and fears rarely have severe mental illness, and it is much better for help to be sought early rather than late.

108 Control Your Dreams

The secret of controlling the hidden powers of sleep lies in lucid dreams. A lucid dream is a special type of dream in which the dreamer is consciously aware of himself and of the fact that he is dreaming. Studies have shown that while only one in ten of us has regular lucid dreams, most of us experience them sporadically and almost all of us can, with patience and practice, discover how to produce and control them.

Lucid dreaming is a powerful research tool in scientific explorations of the dream state. It might also be helpful in increasing self-confidence, improving mental health, and facilitating creative problem solving. Moreover, lucid dreaming could be extremely beneficial to nightmare[7] sufferers, giving them the chance to overcome their fears. Thus, they could reduce their nightmare problems, and by doing so, increase their self-confidence and self- esteem. Lucid dreaming could also provide the handicapped and other disadvantaged people with the possibility of realizing their impossible dreams. Paralytics could walk again in their dreams, for example.

In the last 20 years, lucid dreaming has attracted serious attention from researchers. An early breakthrough in dream studies came during the mid-50s When two American scientists noticed that, at certain times during the night, a sleeper's eyeballs moved rapidly beneath closed eyelids as if watching moving images. If they were woken up at this point, most people reported that they had been dreaming. By monitoring the eye-movements electronically, researchers found that most of us dream every 90 minutes during our sleep.

So, how can you become a lucid dreamer and make dreams work for you while you rest? You must first train yourself to wake up towards the end of the last vivid dream of the night, as lucid dreams are most likely to occur just before we wake up. Using an alarm clock is not a good idea —. it will wake you too abruptly to remember your dream. The trick is to train yourself to wake up naturally. Once you are awake, think carefully about your dream and try to remember as many details as you can. Next, devote five minutes to a mentally stimulating task, such as reading a book. Finally, turn over in bed again and say something like this: "The next time I dream, I will be aware of the fact that I am dreaming." Now, relax, close your eyelids, and begin moving your eyeballs gently as if you were in REM (Rapid Eye Movement) sleep. After a while, you will fall asleep once again, and if all goes according to plan, pick up the dream you just left. But this time you should know you are dreaming and be able to decide what happens next.

[7] a bad dream

With practice, it is no longer necessary to wake up and go to sleep again. Each time you enter a lucid dream, and these can last from two to ten minutes, you will know that you are dreaming and be able to create whatever images you like. Don't be disappointed if learning to control lucid dreaming proves a lot more difficult than you imagined. Although lucid dreaming is a learnable skill, currently available methods, all of which involve mental concentration, require a considerable amount of time and effort. However, the effort is usually well worth it. After all, when you consider that even the liveliest and most energetic of us spends around 20 years of life asleep, it seems a dreadful waste not to make better use of the time!

109 Trance

The word 'hypnosis' comes from the Greek word 'hypnos', which means 'sleep'. Although it is hard to define hypnosis, because it has many aspects and degrees, it might be said that hypnosis is a kind of trance (a sleeplike condition) in which the subject responds strongly to the suggestions of the hypnotist. It is difficult to know exactly what changes hypnotism produces in the functioning of the nervous system or the personality.

There are many theories on hypnosis, but no single theory is accepted as completely explaining all aspects of hypnosis. One of the oldest theories regards hypnosis to be a form of sleep. This concept originated in 1784, and was further developed by Ivan Pavlov. However, this theory is contradicted by evidence which indicates that the hypnotized person is not asleep: the knee reflex, which is absent in sleep, is present in the hypnotic state, and recordings of brain waves show the typical patterns of the state in which we are awake.

Methods of putting a subject into a trance have changed in recent years. Very few modern hypnotists use the old method of staring into the subject's eyes. Instead, they use methods which emphasize relaxing or even sleep. The subject sits in a comfortable chair while the hypnotist talks quietly, giving the subject directions and suggestions which lead him slowly into a trance. The hypnotist watches for signs for this stat^. For example, many subjects don't talk when they are in a trance. Instead of talking, they nod or shake their heads when they have to answer the questions the hypnotist asks them.

The hypnotic trance may be classified according to its degree, which depends partly on the hypnotist and partly on the subject.

In a light trance, the eyes are closed, breathing becomes slower and the subject is able to carry out simple suggestions. The subject is usually unable to open his eyes or move his arms if the hypnotist tells him that he cannot.

In a medium-deep trance, the subject is able to experience feeling of movement even though he is not moving. After coming out of the trance, the subject may not remember what happened during the time he was in a trance.

In a deep trance, the hypnotist can produce very unusual effects. For example, he may tell the subject that, when he comes out of the trance, he will think that he sees a clock on the wall and that he will look at it and say it is midnight even though it's four o'clock in the afternoon. When he comes out

of the trance, the subject will do what he is told to do, but he may not remember anything about what happened in the trance.

In contrast to many people who can be put into a deep trance quite easily, there are others who are not affected at all. The number of such people constitutes about 20% of the population, but this percentage may be higher among people who are 55 or older. Also, subjects who try too hard to fall into a trance may actually be difficult to hypnotize just like those who are afraid or suspicious of hypnosis or the hypnotist. People who resist the process can't be hypnotized either. However, some experimenters have reported that it was easier to hypnotize people who did not know they were being hypnotized. These subjects were patients who needed treatment for various kinds of nervous conditions. They were simply told that the doctor would teach them how to relax.

Contrary to popular belief, there is no possibility of the subject not awakening as a result of an accident to the hypnotist. It is also not true that a hypnotized subject is completely under the will or power of the hypnotist.

110 Raising A Smile

Humor, the way people regard things as amusing, was often seen in a very negative way in the past. For Plato, for example, it meant trying to give yourself a sense of superiority by making fun of other people, and he thought that only people who lacked self-confidence did this.

Modern psychology, however, regards humor with more respect. Sigmund Freud, the founder of psychoanalysis, considered laughter to be a means of releasing nervous energy safely. He thought laughing provided relief and made potentially damaging disagreements harmless. While this approach is still very influential, more recent work in psychology has also focused on the social value of being funny, that is, the useful role of the well-timed joke or light remark in everyday encounters.

A study of humor has revealed that a person's sense of humor depends very much on his point of view. Political opinions and ethnic background all influence the way a joke is received and how funny people find it. The study has also shown that humorous people are perceived as being more likeable, and this enables them to have a greater influence on others. In one experiment, trained psychology graduates played the role of sellers in a bargaining situation in which a painting was to be sold. They were instructed to take a humorous approach, while others made no jokes at all and bargained in a straightforward, serious way. It was found that the dealers with the more light-hearted attitude were able to get a significantly higher price for the painting. What humor does, in this context, is to reduce the buyer's feelings of threat and anxiety and to establish a more relaxed relationship with the seller. In this way, both trust and attraction are increased and the buyer feels safe.

The implications of this study are quite important. If humor can help the salesman, then it can also help others in a similar way in different situations. If you can get people to laugh with you, then you have already established a degree of leadership that you can later build on. Humor can improve your image in a conversation with a group of friends. It can be used as a persuader in other social contexts and is useful in opening conversations with the opposite sex. Establishing a relaxed mood helps a relationship to develop quickly. Making jokes may also allow you to avoid a useless discussion without hurting the other person's feelings.

Many researchers believe that being really funny can only be achieved by returning to a more childlike view of the world. This may be related to the fact that comedians adopt humor early in life as a way of getting people to like them and attracting their attention. Many comedians have reported that their use of humor developed in early schooldays and was a means of coping with anxiety-producing situations. Such strategies were rewarded with laughter from both classmates and teachers.

As Freud suggested, humor can also be a replacement of aggression with a more positive attitude. The professional comedian is thought —by psychoanalysts— to be an angry person whose skills allow him to express his aggression in a socially acceptable and productive manner. In other words, comedians are regarded as aggressive people, but they have enough strength of character to transfer their emotions into a creative expression.

As well as for comedians, for all of us, humor is not only a valuable social tool but also a useful way of coping with personal frustrations or emotional difficulties. By laughing about them, we achieve a more relaxed mood in which we are better able to communicate with others.

111 The Mind-Body Connection:

Are You Blocking Your Way to Success and Happiness?

The holistic perspective, or the view which accepts the mind and the body as parts of a whole, is still a mystery for many people. This is because they probably grew up seeing their mind and their body as completely divided, separate systems. In fact, when they became ill, their bodies were treated in separate units, which has been the case in traditional Western medicine for centuries. The holistic perspective, on the other hand, regards the two as interrelating parts of a whole.

According to the holistic perspective, the mind-body connection occurs through vehicles called meridians. We have thousands of meridians, which are energy channels that run throughout the body and are associated with our organs. In Eastern medicine, the energy flow through the meridians is referred to as 'prana.' Prana means 'life force.' If this life force becomes blocked from trauma or from life's demands (popularly known as stress), illness can occur. Illness can show itself in all forms, from severe pain to a weak immune system to organ problems. These blocks in the life force can slow one's progress toward creating a satisfying life. For example, one can be too ill or in too much pain to try new things. Apart from physical illnesses, there can be psychological disturbances, such as depression, which can prevent one's ability to create the relationships one needs in order to succeed. The stress in our life can also block our creativity. When our creativity is blocked, we can never truly judge or understand how to reach complete happiness.

What can be done to open blocked meridians? First of all, we should try to get rid of the clutter of years of anger and fear. These feelings absorb the energy we can otherwise devote to creating supportive relationships and environments that will carry us toward our dreams. If we cannot overcome our problems by ourselves, we can consult professionals. Today, just like people who practice holistic health, modern medical practitioners are also beginning to acknowledge the connection between the mind and the body and treat their patients' physical and emotional illnesses as a whole. In addition to traditional treatment methods, more and more doctors are prescribing exercise and stress-reduction techniques. In some cases, massage, acupuncture, and other alternative therapies are recommended as supplementary care.

In order to become healthy, happy, and successful individuals, we need to bring our bodies to a state where our life energy flows freely. This flow can occur only with a dedicated mind, a mind committed to health and well-being. The most important step is to maintain a balanced life that includes mindful eating, physical activity, and a peaceful mind. Being balanced, healthy, strong, and

flexible creates the self-esteem, confidence, and strength for being successful in life. This lifestyle will ultimately lead to achieving one's fullest potential.

112 The Effects Of Our Environment

Physical settings, architecture, and interior design affect our communication. Recall for a moment the different homes you have visited lately. Were some of these homes more comfortable to be in than others? Certainly a lot of these kinds of feelings are shaped by the people you are with, but there are some houses where it seems impossible to relax, no matter how friendly the hosts are. We've spent what seemed an endless evening in what Mark Knapp calls "unliving houses," where spotless ashtrays, furniture coverings, and plastic lamp covers seemed to be sending nonverbal messages telling us not to touch anything, not to put our feet up, and not to be comfortable. People who live in these "unliving houses" probably wonder why nobody ever seems to relax and enjoy themselves at their parties. One thing is quite certain: They don't understand that the environment they have created can communicate discomfort to their guests.

There's a large amount of research that shows how the design of an environment can shape the kind of communication that takes place in it. In one experiment at Brandeis University, Moslow and Mints found that the attractiveness of a room influenced the happiness and energy of the people working in it. The experimenters set up three rooms: an "ugly" one, which resembled a janitor's closet in the basement of a campus building, an "average" room, which was a professor's office, and a "beautiful" room, which was furnished with carpeting, curtains, and comfortable furniture. The subjects in the experiment were asked to rate a series of pictures as a way of measuring their energy and feeling of well-being while at work. Results of the experiment showed that while in the ugly room, the subjects became tired and bored more quickly and thus it took them longer to complete their task. Subjects in the beautiful room, however, rated the pictures they were judging more positively, showed a greater desire to work, and expressed feelings of importance, comfort and enjoyment.

Many business people show an understanding' of how environment can influence communication. Robert Sommer, a leading environmental psychologist, described several such cases. In his book *Personal Space*, he points out that dim lighting, lowered noise levels and comfortable seats encourage people to spend more in a restaurant or bar. Knowing this fact, the management can control the amount of customer turnover. If the goal is to run a high- volume business that tries to move people in and out quickly, it is necessary to keep the lights shining brightly and not worry too much about keeping sound out. On the other hand, if the goal is to keep the customers in a bar or restaurant for a long time, the proper technique is to lower the lighting, and use absorbent building materials that will keep down the noise levels. Furniture design also affects the amount of time a person spends in an environment. From this knowledge came the Larsen chair, which was designed for Copenhagen restaurant owners who felt

their customers were occupying their seats too long without spending enough money. The chair is constructed to put an uncomfortable pressure on the sitter's back if occupied for more than a few minutes. Sommer also describes how airports are designed to discourage people from spending too much time in waiting areas. The uncomfortable chairs, connected shoulder to shoulder in rows facing outward, make conversation and relaxation next to impossible. Faced with this situation, travelers are forced to move to restaurants and bars in the terminal, where they not only feel more comfortable but also spend money. Casino owners in places such as Las Vegas also know how to use the environment to control behavior. To keep gamblers from noticing how long they have been playing roulette and blackjack, they build their casinos without windows or clocks. Unless they wear a wristwatch, customers have no way of knowing how long they have been gambling.

Even the design of an entire building can shape communication among its users. Architects have learned that the way housing projects are designed controls to a great extent the contact the neighbors have with each other. People who live in flats near stairways and mailboxes have much more neighbor contact than those living in less heavily traveled parts of the building, and tenants generally have more contact with immediate neighbors than with people even a few doors away. Architects now use this information to design buildings that either encourage communication or increase privacy, and house hunters can use the same knowledge to choose a home that gives them the neighborhood relationship they want.

113 Monsters Or Victims?

Serial killers and their motives have always attracted people's interest. Why do they kill? Does killing result from generic, hormonal, or other biological factors? Does cultural conditioning play a role in killing? Do serial killers have any control over their desires and rage? We all have our unfulfilled desires and experience rage, but we have some sort of internal cage that keeps our inner monsters locked up. What about serial killers? Are they insane? What sets them apart from others? Now let's have a look at the characteristics that an average serial killer has.

Statistically, serial killers have some common character traits: The average serial killer is a white male from a lower to middle-class background, usually in his twenties or thirties. In their childhood, most are physically or emotionally ill-treated by parents. Some are adopted. As children, serial killers often set fires, torture animals, and wet their beds, which are the three important symptoms of future serial killers. Brain injuries are another common feature. Still, some are very intelligent and have shown great promise as successful professionals. They are active, outgoing figures in business and society. Most serial killers are also fascinated with authority in general. Some have attempted to become police themselves but have been rejected; some have worked as security guards or served in the military. Many, such as John Gacy and Ted Bundy, disguise themselves as people who are responsible for enforcing the law to gain access to their victims. Carrying badges and driving vehicles similar to those of the police help them feel important and approach their victims, who would otherwise never talk to strangers.

Serial killers tend to choose victims weaker than themselves. Often their victims will fit a certain stereotype which has symbolic meaning for the killer. This meaning is related to the killer's existence. Most of the time, they tend to generalize certain characteristics which they see as a threat and kill people who they believe have these characteristics. For the killer, the victim's existence in this world is a problem which can only be solved through the act of destruction. As the killer has generalized the threat into a certain stereotype, the killing game never ends. Ted Bundy, for example, killed college girls with long brown hair. Was he killing over and over again because of his upper-class fiance, who broke off her engagement with him? Another killer hated all women: "I blame them for everything. Everything evil that has happened in the world somehow goes back to them." John Gacy strangled young men, some of whom were his own employees, seeing them as "worthless little creatures." Some believe that Gacy's rage was projected onto the boys, who represented his own childhood and relationship with his own authoritarian father.

Serial killers usually try to present a number of excuses for their killing. Henry Lee Lucas, killer of an unknown number, blamed the way he had been brought up. Others like Ted Bundy, who killed about 36 women, claimed pornography made him do it. Herbert Mullin, Santa Cruz killer of 13, blamed the voices in his head that told him it was time to "sing the die song." The most psychopathic, like John Gacy, turned the blame around and said that the victims deserved to die.

Can a normal person slaughter another human for the simple pleasure of it? One thinks that serial killers are totally insane and that we can notice their insanity easily. We assume that a maniac with an uncontrollable wish to kill will be unable to control himself. On the bus, in the street, we try to avoid the mentally ill, the untidy, unshaven man who speaks loudly to himself. However, the most frightening fact is that serial killers mostly seem quite normal, and they calculate their acts very carefully. If we want to avoid serial killers, our best strategy should be to stay away from nicely dressed, polite individuals, as they mix among ordinary people easily. We can see him anytime, anywhere. "Dress him in a suit and he looks like ten other men," said one psychiatrist in describing Ted Bundy. Like all evolved predators, serial killers know how to approach their victims by gaining their trust. They are wolves in sheep's clothing: they hide behind a carefully constructed appearance of normality.

We believe that we have control over our impulses, and, no matter how angry we get, there is something that stops us from taking our aggression out on others. What about serial killers? What makes them different from us? The answer to this question may be lying in the darkest side of man's mind and may take psychologists a long time to find out.

114 Where Do Dreams Come From?

Most people dream at night. When they wake up in the morning, they say to themselves, 'What a strange dream I had! I wonder what made me dream that.' Sometimes dreams are frightening. Sometimes, in dreams, wishes come true. We can fly through the air or float from mountain tops. At other times we are troubled by dreams in which everything is confused. In dreams we act very strangely. We do things which we would never do when we are awake. Why are dreams so strange? Where do they come from?

People have been trying to answer this since the beginning of time. But no one has produced a more satisfying answer than a man called Sigmund Freud. One's dream-world seems strange and unfamiliar, he said, because dreams come from a part of one's mind which one can neither recognize nor control. He named this the 'unconscious mind.' The unconscious mind is like a deep well, full of memories and feelings. They have been stored there from the moment of our birth. Our conscious mind has forgotten them. We do not suspect that they are there until some unhappy or unusual experience causes us to remember. Then suddenly we see a face we had forgotten long ago. We feel the same jealous fear and bitter disappointments we felt when we were little children. This discovery of Freud's is very important if we wish to understand why people act as they do, for the unconscious forces inside us are at least as powerful as the conscious forces we know about. Why do we choose one friend rather than another? Why does one story not affect us at all? Perhaps we know why. If we don't, the reasons may lie deep in our unconscious minds.

In Freud's day, it seemed that no one knew very much about the mind. If a person went mad, or 'out of his mind,' there was not much that could be done about it. People didn't understand at all what was happening to him. Had he been possessed by a devil or evil spirit? Was God punishing him for wrongdoing? Often such people were shut away from the company of ordinary people as if they had committed some terrible crime. This is still true today in many places. Doctors prefer to experiment on those parts of a man which they can see and examine. If you cut a man's head open, you can see his brain but you can't see his thoughts or ideas or dreams. In Freud's day, few doctors were interested in these subjects. Freud wanted to know what makes us think and feel as we do; that is, he wanted to know how our minds work. He went to Paris to study with a famous French doctor, Charcot, whose special field of study was diseases of the mind and nerves. He learned a lot from him. When he returned to Vienna in 1886, he began to work as a doctor for nerve diseases. Most of the patients who came to see him were over-excited and anxious, sick in mind rather than in body. Medicine did not help them. Freud was full of sympathy, but he could do little to make them better.

Then one day, a friend, Dr. Josef Breuer, came to see him. He told Freud about a girl he was looking after, who seemed to get better when she was allowed to talk about herself. Dr. Breuer allowed her to talk at great length, and she told him everything that came into her mind, whether it seemed important or not. Each time she talked to him, she remembered more about her life as a little child. Freud was excited when he heard this. He began to try to cure his patients in the same way. He asked about the events of their early childhood; he urged them to talk about their own experiences and relationships while he himself said very little. Often, as he listened, his patients relieved occasions from their past lives. The doctor did not make any attempt to stop them. He let them speak as they wished, while he himself remained calm and quietly accepted whatever they told him. One young woman who came to him couldn't drink anything although she was very thirsty. She would hold a glass of water to her lips and then push it away. Something prevented her from drinking. Freud discovered the reason for this. One day, as they were talking, the girl remembered having seen a dog drink from her nurse's glass. She hadn't told the nurse, whom she disliked, and had forgotten the whole experience, but suddenly this childhood memory returned to her mind. When she had described it to Dr. Freud, the girl was able to drink again. Freud called this treatment the 'talking cure.' Later, it was called psychoanalysis. When patients talked freely about the things that were troubling them, they often felt better and learned to control their fears.

Whatever Freud learned he reported to other doctors, and many of them were greatly upset by his discoveries. Even Dr. Breuer's courage was not enough for him to continue with his experiments, and Freud stopped his experiments. It was hard to believe that people could become blind, or lose the power of speech, because of what had happened to them when they were children. The human mind was turning out to be a dark and fearful place.

Freud was attacked from all sides for the things he said and wrote. He made many enemies, but he also found firm friends. Many people believed that he had at last found a way to unlock the secrets of the human mind and to help people who were very miserable. He had found the answer to many of life's great questions. He became famous all over the world and taught others to use the 'talking cure.' His influence on modern art, literature, and science cannot be measured. People who wrote books and plays, people who painted pictures, people who worked in schools, hospitals, and prisons all learned something from the great man who discovered a way into the unconscious mind.

Not all of Freud's ideas are accepted today, but others have followed where he led and have helped us to understand ourselves better. Because of him, and them, there is more hope than there has ever been before for people who were once just called 'crazy.'

BIOLOGY & GENETICS

115 Sleep

Many people think that nothing happens when they sleep. Doctors, on the other hand, have studied sleep for many years, and they think that a lot happens when people sleep.

Doctors say that people have five stages of sleep and that they usually go through each phase about every 90 minutes. During the first two stages, you sleep lightly. If someone calls you or puts his or her hand on you, you wake up quickly. Your body rests quietly. You breathe more slowly than when you are awake. Your heart beats slowly. During stages three and four, you sleep deeply. If someone puts his or her hand on you, you don't wake up. Your heart beats more slowly than it does in stages one and two. Neither sounds nor lights wake you up. The last stage of sleep is called REM (Rapid Eye Movement). During REM sleep, your eyes move under your eyelids. You breathe faster, and your heart beats faster than it does in the previous stages. All of these things happen because you are dreaming.1 Dreams are another issue that fascinates people. Doctors say that everyone dreams, but while some people are good at remembering their dreams, others simply forget them.

People do not need the same amount of sleep. Some people get enough rest with only four or five hours of sleep a night, and others may require twelve hours of sleep. That is, they may need a twelve-hour sleep. Why do you need to sleep? Is it bad for you if you don't sleep for some rime? Doctors say you won't be sick, but you will be sleepy and tired the next day.

Some people worry a lot about sleep. Americans, especially, spend at least 25 million dollars a year on sleeping pills. However, doctors say this is a bad idea. After you use sleeping pills for about 14 days, they don't help you anymore. Some sleeping pills won't let you go into sleep stage four; others won't let you go into REM sleep. Therefore, you can't get a good night's sleep with sleeping pills. So, what can you do if you have a sleeping problem? Take a warm shower before you go to bed. Don't drink coffee or eat a lot before bedtime. Drink a glass of warm milk. Finally, do not think about your problems in bed.

116 All In The Memory...

Many people complain that their memory is bad, particularly as they get older. Phone numbers, names, and facts we studied only a few days ago are easily forgotten. Life would be so much easier if we could remember them all effortlessly. So how can we improve our memory?

Many people think that repeating things is the best way to remember them. While this undoubtedly helps short-term memory (remembering a telephone number for a few seconds, for example), psychologists doubt whether it can help you remember things for very long. The British psychologist E. C. Stanford seemed to prove this point when he tested himself on five prayers that he had read aloud every morning for over 25 years. He found that he could remember no more than three words of some of them! If you want to remember numbers, "chunking," or grouping the information, is much more helpful. The following numbers would be impossible for most of us to remember: 1492178919931848. But look at them in 'chunks,' and it becomes much easier: 1492 1789 1993 1848.

So what about "memory training?" We've all heard about people who can memorize packs of cards — how is this done and can anyone learn how to do it? According to experts, there are various ways of training your memory. Many of them involve forming a mental picture of the items to be memorized. One method, which may be useful in learning foreign languages, is to create a picture in your mind associated with a word you want to remember. For example, an English person wishing to learn "pato" (the Spanish word for "duck"), could associate it with the English verb "to pat." Imagining someone patting a duck on the head would remind the learner of the Spanish word.

Another method is to invent a story that includes all the things you want to remember. In experiments, people were asked to remember up to 120 words using this technique; when tested afterwards, on average, they were able to recall 90 per cent of them! Surprisingly, however, there is nothing new about these methods — they were around even in ancient times. The Roman general Publius Scipio could recognize and name his entire army — 35,000 men in total!

However, not all of us are interested in learning long lists of names and numbers just for fun. For those studying large quantities of information, psychologists suggest that the best way to "form meaningful connections" is to ask yourself lots of questions as you go along. So, for example, if you were reading about a particular disease, you would ask yourself questions like: "Do people get it from water?" "What parts of the body does it affect?" and so on. This is said to be far more effective than time spent "passively" reading and re-reading notes.

Finally, what about this problem? What happens when people lose their memories? Memory loss can take many forms: cases of people who forget their identity and end up wandering the streets are relatively common. Rarer cases include the man who lost his memory for faces and believed that a stranger was watching him every time he looked in the mirror, or the man who lost his visual memory and could not recognize everyday objects, confusing a pen with a knife, for example.

117 Understanding The Human Brain

Historically, anatomists have been able to make vague inferences about the human brain by comparing it to the brains of animals; i.e., if mammalian brains have grown outward from a root structure —the brainstem— which is similar to the complete brain of a reptile[8], it's reasonable to suppose that "reptilian" responses (e.g., breathing, heart rate, pleasure) might still exist there. Likewise, the more complex mammalian behaviors (e.g., social organization and caring for the young) should logically be controlled from other regions which reptiles don't have.

But that's about as far as comparative anatomy will get you. In order to map the living brain in greater detail, researchers have traditionally waited for humans to have an accident or disease. -When a part of the brain is destroyed or disconnected, doctors can observe the changes in the victim's behavior, cognitive (reasoning) abilities, reported sensation, etc., and thereby understand the function of the affected region. Since this kind of damage can be devastating, it's hard not to see this as one of science's darker corners.

Over the centuries, the misfortunes of a few have provided important knowledge to scientists, and a reasonably detailed map has been drawn that can offer us helpful hints like "If you're an artist or a dancer, let the bus hit you on the left side. If you're an auctioneer or used car salesman, let it hit you on the right."

Fortunately, beginning in the 1980s, it became possible to measure brain activity directly and non-destructively, using two exciting new technologies: Positron Emission Tomography (PET) and Magnetic Resonance Imaging (MRI). A PET scan relies on the detection of gamma rays and can take detailed neural "snapshots," or brightness maps, which accurately reflect the levels of activity across the entire brain, all at once. With a PET scan, an image taken of a brain at rest can be contrasted with an image of a brain doing a specific task. This yields a very exact picture whose bright spots highlight only the brain areas that are directly involved. These highlights are repeatable, too; the same areas will light up every time the subject performs that task. So while we can't yet tell what a person is thinking, we're rapidly developing the means to see where they're thinking, and thus,, at least in rough terms, what they're thinking about. The MRI scan operates on a different principle: sensing the electromagnetic signature of oxygen directly. Its sensors rely on powerful electromagnets which can literally suck bits of metal completely through a human body.

[8] a cold-blooded animal like a turde or snake

As this kind of mapping continues and our brains' self-understanding explodes, it isn't hard to imagine some sinister applications. What if enemy governments or criminal organizations had the ability literally to read our minds? We might not want even our friends and lovers to know us quite that well. Still, there are as many intriguing possibilities on the positive side. Knowing exactly how our brains function, we may find it possible to cure a host of neurological and psychological ailments.

118 Disease Detectives

Recent technological changes are making modern medicine more popular and exciting than ever before. New technology is now available to modern "disease detectives," doctors and scientists who are using clues to solve medical mysteries—that is, to find out the answers to questions of health and sickness. The knowledge of genetics may prevent or cure birth defects and genetic illnesses. Successful transplants of the heart, liver, kidney, and other organs of the body are much more common than they were ten or twenty years ago.

Modern "disease detectives" include microbiologists, epidemiologists, and other scientists who try to find out the reasons for an epidemic—a sickness that many people in one region have. These experts talk to people with the disease and ask them many questions, such as: What do you eat most often? How often do you wash your hands? Do you use drugs? They inspect kitchens, bathrooms, and air-conditioning systems. Then they study the outside environment for clues that might give them information about the disease. They share the information that they, find with laboratory scientists, who have the benefits of microscopes and computers. Together, they work to find the causes of modern killer diseases.

What are genes and why are "disease detectives" always trying to find out more about them? Genes are part of the nucleus (that is, the center) of every cell; in the form of DNA, this "genetic material" determines the characteristics of every living thing—every plant, animal, and human being. Medical geneticists are scientists who study DNA and genes for many purposes: (1) to learn how organisms such as bacteria and viruses cause illnesses; (2) to detect the gene or combination of genes that causes inherited diseases like sickle-cell anemia and Huntington's disease; (3) to understand the gene changes that lead to birth defects or genetic illnesses; (4) to change gene structure and thus prevent or cure genetic diseases; and (5) to improve the chances of success in organ transplants. For these and other reasons, genetics is an important part of modern science and medicine.

Another field that modern disease detectives are highly interested in is organ transplantation. Organ transplants are not only more common but also more successful now than they were in the past because of modern technology. In other words, people with a new heart, liver, or kidney can live much longer than they did in the past. Not long ago, transplant patients often died after a few days because their bodies fought against the new organ. New drugs, however, now help the human body to accept a new part. In addition, knowledge of genes and DNA increases the possibility of successful organ transplants. Doctors can now try to "match" the characteristics of the organ donor (the person who gives the body part) and the receiver. Furthermore, scientists can change genes. They can change the

structure of DNA, and they can also put genes from one organism into another. In the future, therefore, scientists may put human genes into pigs or other animals, and farmers may raise animals for the purpose of organ transplants for humans.

119 Brain Circuits

The complexity of the human brain has made brain research the last great border between what is known and unknown. Scientists from many different fields have combined their findings to understand the mystery of how the brain functions. Their research has led to our understanding of how information scattered throughout the brain can be brought together in "circuits"—connections of different parts of the brain working simultaneously. These circuits direct many actions and skills which are required in our lives. Scientists are just beginning to learn which circuits control which skills and how the number of circuits affects intelligence.

As researchers learn new things about the working of the brain, they sometimes learn that some of their earlier ideas were incorrect. One misconception was that people must mentally or physically pronounce words to understand them. Actually, people can understand words by either hearing or seeing them. In both situations, circuits go to the left frontal lobe, which gives meaning to the words.

Information in the brain is scattered everywhere. Different types of words — nouns, verbs, adjectives — are kept in different places. In addition to this, the brain also separates the parts of images and stores them in different places in the visual cortex. The visual cortex has different places for color," movement, size, etc. Thus, if the color part of the cortex is damaged, people can still see, but they cannot see in color. Similarly, if the movement part is damaged, then a person can see only stationary objects. In short, different features are dealt with separately but are combined instantly.

The brain also switches circuits. There is one circuit for learning new things and another for remembering. In one study, 'common nouns were shown to 11 adults. They were supposed to give a matching verb. For example, if they saw the word "bird," they might have answered with "fly." In this exercise, four areas of the brain were active. The adults did this exercise for 15 minutes with different nouns. Then they were given the same nouns again. This time, the original four areas were not active. Instead, the brain's motor system, which automatically controls muscles, was activated. Thus, the brain does not consciously think after it has learned the answer. It simply responds automatically. However, when the adults were given new and different words, the original four areas were reactivated. It seems that the brain uses certain circuits for learning new words, and after it has learned them, it switches to "remembering" circuits for those same words.

Of course, sometimes people learn something partially. Then they use both areas for thinking and remembering. However, they use less energy for automatic remembering than for conscious thinking. In other words, in the process of learning new words, people think less and therefore use less energy

when they see a new word a second time. They continue to think less and use less energy until the new word is completely learned.

Interestingly, the decrease in energy for thinking seems to be related to intellectual development in children and intelligence in adults. When a baby is born, its brain is highly active, and it is a mess of brain circuits. It uses a lot of glucose—the sugar that the brain burns for energy—for its thinking, and it uses even more of it as it grows older until it becomes five years old. At this time, a child uses about two times as much glucose as an adult. Then, the child starts to use much less glucose and fewer circuits until the age of 15. The decreasing use of brain circuits is called "pruning," the cutting of unneeded circuits. Just as trees grow better when they are pruned, people become more intelligent as more circuits are pruned. Those people whose circuits are pruned the most become the most intelligent. That is, more intelligent brains use less energy because they use fewer brain circuits, but less intelligent brains use more circuits and therefore waste more energy. Pruning may, therefore, explain why some people are more intelligent than others.

120 Genetic Engineering

Dramatic achievements in genetic engineering are rapidly revealing the secrets of how genes work. Some researchers are probing into its social and economic benefits. For example, they are trying to produce more meat and milk from genetically engineered cattle. Moreover, current advances bring medicine closer to curing hereditary illness in humans, instead of merely treating its symptoms, as medical practices are now restricted to doing.

However, many people are worried: what if an evil dictator produces hundreds of copies of himself through cloning in order to take over the world or grieving relatives use cloning to bring their loved ones back to life? The truth is there is no chance that any copy of a human being would be identical either physically or mentally, any more than children are identical to their parents.

Scientists quite reasonably point out that human genetic engineering still faces immense technical obstacles. Getting a new gene into a cell is just the first of many giant steps that are required. Like NASA engineers sending a space probe into another planet, researchers must not only deliver a gene to their target, but then turn it on and get it to work properly.

It was just these problems that thwarted the controversial work of UCLA's Dr. Martin Cline. In July 1980, he tinkered with the bone marrow of two young women suffering from thalassemia, a fatal defect in hemoglobin production. The idea was to give a few of their marrow cells normal genes in hopes that the repaired cells would multiply and cure the inborn defect. It does not appear to have worked. When the experiments were revealed the following autumn, Cline was asked to resign his post as head of his division. The following year, the National Institute of Health stripped him of two federal grants — he had four — worth more than $190,000. The unprecedented punishment was a stern warning to researchers to move slowly in testing gene therapy on people.

Cline's approach is sadly limited as it can apply only to tissues whose cells, like those of bone marrow, continue to divide throughout life so that the genetically engineered cells can eventually replace the natural, defective ones. Many organs produce cells only intermittently or, like the brain, stop altogether once they are fully developed. For defects in these organs, other methods are needed. One hope is to insert the desired gene into a virus that would infect the afflicted tissue and use the virus to get the gene to its target — cells with defective genes.

However, the method, called viral transduction, is problematic. As Thomas Caskey, professor of medicine and biochemistry at Baylor College of Medicine, sees it, "the problem is to engineer a virus so that it will be defective, that is, will not cause a disease, yet will carry the desired gene into a certain

tissue and reproduce it just as disease-causing viruses reproduce their own genes. This is a formidable task, but not insurmountable."

Perhaps riot, but all forms of gene therapy now being explored present problems that will keep them from being widely used. Caskey says "people have gotten the impression that this work is going to lead to miraculous cures, but it is really going to be applicable only to a small category of patients with rare diseases." The trouble is that the gene therapies now under development can work only with inherited diseases limited to a single tissue and there are relatively few of such diseases. Most genetic, disorders have far wider effects. Cystic fibrosis, for example, affects the lungs, intestinal tract, pancreas and sex organs. So far, there is no way to deliver a 'good' gene to all these tissues at once.

Other defects present even more difficult problems. Down's syndrome, the most common cause of severe mental retardation, is genetic, but it is not caused by a single gene. Instead, Down's patients carry an entire extra chromosome, a package of DNA comprising several thousand genes. No one has been able to devise a way to remove that extra chromosome from every cell in a child's body, or to undo the damage it wreaks on the brain. Nor will gene therapy avert such disorders as diabetes, heart disease and high blood pressure. These are all produced in large part by environmental factors, but they develop most often in people genetically predisposed to them. These conditions, too, probably involve more than one gene, medical geneticists believe.

Getting foreign genetic material into a complex organism is no easy task. Most scientists have simply injected the new genes into a fertilized egg through a glass needle finer than a hair. They call this technique microinjection. The process is traumatic and many of the eggs die. However, some survive, and when transferred into the uterus of a host mother, they can live out lives that appear otherwise normal.

The first success of this kind was reported by three Yale scientists, who were able to identify foreign genes in one, or perhaps two, of 150 newborn mice grown from microinjected eggs. Of crucial importance for the future of embryo genetic engineering, those mice passed the gene along to their children and grandchildren. However, it is not enough simply to get the genes into the animal. Once there, they must behave normally and this involves two more problems. The first problem is gene expression: a gene 'expresses' itself by making the protein it is supposed to make. The other problem is gene regulation: a gene must not only make the right protein, but turn it out at the right place and time and in the right amount.

If putting a foreign gene into an embryonic mouse is no easy task, getting the gene to express itself is far more challenging. Since the Yale announcement, a number of research groups have reported

successful gene insertion and even inheritance. However, only three have claimed that the foreign genes in their engineered rodents expressed themselves.

These successes in engineering other species force us to wonder about the genetic manipulation of Homo Sapiens. As we want to heal hereditary illness, we are slipping toward the genetic engineering of human beings almost without realizing it. Nonetheless, genetic engineering will not be forced upon us as a few social forecasters have led us to believe, by a new Hider wishing a mindlessly obedient populace. We will seek out, applaud its humane goals and espouse it greatly.

121 Genetic Ethics

The promises of genetic engineering seem almost limitless. In only a few years, scientists have developed methods for producing valuable new substances and materials, and predicting which diseases a person is likely to get in later life. Even more remarkably, medical researchers have been able to locate the genes responsible for nearly six hundred diseases. Locating these genes is the first step toward repairing or replacing them and thus preventing the diseases they cause. Together with the many benefits of genetic research, however, are the dangers and risks involved whenever scientists interfere with the basic structures of life.

One of the most significant risks of genetic agriculture is the possibility that genetically engineered species will mix with natural species. Scientists are not able to predict the results of such a mixing. For example, scientists have successfully engineered a new species of carp, a fish that is popular in many parts of the world. This new species contains a growth gene from another kind of fish, the rainbow trout. The new kind of carp grows twenty percent faster than ordinary carp. What does the future hold for such 'improved' species? Will they destroy all the other fish in the oceans? When only the engineered species are left, will these die out from some genetic weakness that scientists have not foreseen? Clearly, it is dangerous to play such games with nature.

Another major user of genetic engineering techniques is manufacturing industry. Genetic manufacturing could be more dangerous than genetic agriculture. In manufacturing, microorganisms are changed so that they will produce desired substances or perform desired functions. Because these creatures are too small to be seen without microscopes, and because they tend to reproduce rapidly, their potential for creating hazards is great. One of the greatest dangers of altered microorganisms is their tendency to undergo spontaneous mutations. When organisms mutate spontaneously, they change into different organisms without any outside influence. The changed organisms may be much more dangerous than the original, genetically altered ones. Some critics worry that mutating organisms could get out of control, spreading new, incurable diseases or destroying agricultural crops.

The area of greatest concern to the critics of genetic engineering is medical science, for genetic medicine would affect people directly by altering human genes. One of the fastest growing fields of medicine is transplant surgery, which can often extend the patient's lifespan and improve the quality of life. As a result, there is a large demand for replacement organs. However, relatively few such organs are available. Genetic engineering may provide some solutions to this problem. Genetic techniques will enable doctors to predict the kinds of diseases that a person is likely to experience later in life. Even more remarkably, genetic engineering will eventually enable scientists to create humanoids that could

be used as a source of spare organs. These creatures may contain human hearts, kidneys, lungs, and other organs. However, the use of humanoids would present a completely new set of ethical problems to be discussed and resolved.

Another example of a genetic technique that may soon have implications for genetics is amniocentesis, a procedure for determining the sex of a fetus. In some societies, in which boys are prized more highly than girls, mothers who do not want to give birth to a girl occasionally use this technique to determine whether or not to have an abortion. With the help of genetic engineering, by changing the genes on a single chromosome, the sex of a baby could be changed while it is still in the womb. Again, however, this must be dealt with before such a procedure could be permitted.

In dealing with the ethical concerns of generic engineering, another issue to consider is eugenics. It is concerned with using biotechnology to remove biologically undesirable characteristics to make genetic changes that will improve an organism or species. Soon, doctors will be able to give us a list of our genetic weaknesses. In other words, they will be able to tell us what genetic diseases we are most likely to get and how we will possibly die. Even before biotechnology provides us with treatments for these diseases, however, we will have ethical choices to make. Society will have to decide who is allowed to use personal genetic information and for which purposes this information may be used. Genetic information about individuals poses two important concerns. One is whether knowledge of the information is itself potentially hazardous to the individual; the other is whether institutions will misuse that knowledge to foster their own dominance and control. In the near future, employers may demand to know the genetic profiles of their workers. They may fire or refuse to hire people with certain genetic weaknesses. Schools may refuse to admit children whose genetic profiles indicate behavioral problems or learning disabilities.

In view of these ethical considerations, society should consider seriously whether science should be thinking about genetic engineering of human beings at all.

SCIENCE & TEKNOLOGY

122 The Internet

When one considers all the information about the extensive use of the Internet, one would assume that youngsters all over the world were using it. However, this would be a misconception. It isn't as though these youngsters wouldn't want to, given the chance, but British junior schools have neither the time nor the money to offer their students this opportunity. Most lack the funds and teachers with enough technical expertise to be able to successfully install or operate an Internet system.

A specialist company called Research Machines (RM) develops and supplies information systems, software, and services to junior schools, Colleges, and universities. It specializes in the British education system and offers some very comprehensive packages. RM sets a fixed annual fee, and this means that users have the advantage of spending a longer time on the Internet without continually having to worry about the cost.

Although schools are expected to use the Internet responsibly, some individuals do not do so. This can have disastrous results. Internet users communicate with one another by using telephone circuits, and, like RM, most Internet systems charge a standard fee with no time charges. This leads to heavy Internet users taking advantage of this standard fee and spending hours on the net. This jams local telephone circuits and may prevent ordinary bill- paying telephone users from making calls, even in emergencies.

Now, thanks to the Internet, anyone can offer such services; there is no advantage in owning the telephone lines. Worse, the Internet is already starting to embrace more traditional telephone services. Internet users jam telephone circuits and create inconvenience and possible danger to telephone users, and they also cost the telephone companies a great deal of money. The companies frequently have to replace and install expensive new circuits. This is a result of the fact that Internet users are continually overloading their systems.

The problem is that while it is costing the telephone companies money, it is quite legal. Telephone companies claim that Internet users are abusing their networks and that this is a war being fought on an international scale. Another international battle is approaching. This one is going to be on the kind of information that should be checked before it is transmitted over the Internet.

At an international conference in Salt Lake City, former British Prime Minister Margaret Thatcher warned that corrupt governments and evil individuals might abuse the Internet. She also expressed concern about the harm that is being caused to children who have access to offensive material on the Internet. This kind of material, unfortunately, brings forth social and psychological problems. RM, in

the meantime, has restricted easy reach to any information it feels may be unsuitable, and it demands that news groups evaluate their programs for parts that may cause offense, especially to children.

Of 15,000 news groups, RM has banned around 7,000. This attitude is a far cry from the irresponsible attitude being demonstrated by a number of people on the open Internet. Of course, it is inevitable that there will be drawbacks to something as powerful as an international communications system. However, with RM, the benefits for young people will certainly be to their advantage. For example, additional knowledge of computers can enhance their chances of future employment. However, encouraging responsible use is the only way forward.

123 The History Of The Internet

The Internet was created in the US in the 1960s as a tool to link university and government research centers via a nationwide network that would allow a wide variety of computers to exchange information and share resources. There were numerous engineering challenges, beginning with the design of a packet-switching network — a system that could make computers communicate with each other without the need for a traditional central system. Others included the design of the machines, data exchange protocols, and software to run it. What eventually grew out of these efforts is a miraculous low-cost technology that is swiftly and dramatically changing the world. It is available to people at home, in schools and universities, and in public libraries and "cyber cafes."

The Internet is not owned or controlled by any organization, corporation, or nation. It connects people in 65 countries instantaneously through computers, fiber optics, satellites, and phone lines. It is changing cultural patterns, business practices, the consumer industry, and research and educational pursuits. It helps people keep up to date on world events, find a restaurant in a foreign city or a cheap flight to Paris, play games, and discuss everything from apples to zoology. It has gathered support for human rights in suppressed nations, saved the life of a child in Beijing, and helped a man in Iowa find a lost family member in Brazil.

Leonard Kleinrock invented the technology of the Internet in 1962 while he was a university student. The packet-switching technology he proposed was a dramatic improvement over the circuit-switched telephone network. Packet switching chops messages into packets, and sends these packets of data independently through the network as if they are electronic letters passing through an electronic post office.

In 1963, a man named J.C.R Licklider visualized a network that would connect machines and people worldwide. This network, which formed the foundation of the Internet, was made public in California in 1969.

Universities and research organizations were among the first to join the network in order to exchange information. Electronic mail was introduced in 1972 by Ray Tomlinson. More networks began to pop up in the 1980s. Commercial organizations, which fell outside the original charter, wanted to use the same packet-switching technologies, and the system came to be known as the Internet during this period. It had far exceeded its original purpose, and was providing the stimulus for a vast technological revolution that was just ahead.

Major innovations in software were necessary before the Internet could function as a global information utility. In 1989, Tim Berners-Lee, a scientist in Geneva, proposed a project that would provide information worldwide called the World Wide Web. Simple tools to retrieve information from the Web and communicate would be the focus of much activity in the next few years. In 1991, the University of Minnesota developed "Gopher," the first successful Internet document retrieval system. In the spring of 1993, a group of graduate students, led by 21-year-old Marc Andreessen, created a "browser" program called Mosaic and distributed it free. Netscape and then Microsoft followed with browsers that greatly simplified a computer user's ability to surf the Internet in search of information.

Today people can search thousands of databases and libraries worldwide in several languages, browse through hundreds of millions of documents, journals, books, and computer programs, and keep up to the minute with wire-service news, sports, and weather reports. An increasing number of people shop, bank, and pay bills on the Internet. Many invest in stocks and commodities online. It's a powerful symbol of society's expectations about the future — fast-moving technology that adds convenience and efficiency to their lives.

Beyond convenience, as people consider the philosophical ramifications of the Internet, some view it as a tool of unity and democratization. In the 1960s, long before the Internet, futurist and author Sir Arthur C. Clarke predicted that by 2000 a vast electronic "global library" would be developed. Recently, a judge cited it as "the single most important advancement to freedom of speech." Marshall McLuhan coined the phrase "the global village" when he spoke of how radio and television had transformed the world in the course of the 20th century. In the 21st century, it seems the Internet is destined to have even more profound effects.

124 Reflecting On Light

Most of what we know comes to us through our ability to "see" with our eyes, our telescopes, and our microscopes, but how do we see? Sight is not something that reaches out from our eyes. Instead, it is the light that travels to our eyes. You see this page, for example, because light, reflecting from the sun or an electric light, travels from the paper to your eyes. Sometimes we see light as it comes from a direct source, such as the sun, fire, lightning, or a light bulb. The rest of the time, we see it as it is reflected off (sent back from) objects.

Light travels at high speeds. It must have been extremely amazing, or surprising, for scientists to realize that light actually "travels." It isn't just there. In the air, light travels at a speed of 186,000 miles per hour. It travels slightly faster in a vacuum, but, in other transparent materials such as water or diamonds, it travels more slowly. It takes light less than one minute to travel from earth to the moon and about 15 minutes to go from the earth to the sun.

In 1678, the Dutch scientist Christian Huygens was the first to suggest that light travels in waves. Since then, the work of the American Albert Einstein arid the Scottish James Maxwell has shown that light actually consists of particles known as photons and travels in electromagnetic waves light seems to travel in straight lines. If you shine a flashlight in the dark, for example, the beam of light appears to be straight. Sound waves, on the other hand, travel in every direction. That is the reason why we can hear people on the other side of the wall but cannot see them.

In certain situations, light diverges from a straight path. In other words, it changes its direction. When it falls on an object, most of it is either absorbed (i.e., taken in) by the object itself or passes through. The remainder of the light is reflected. When light is reflected off a smooth surface, it changes direction in a regular way. If the surface is rough, light is reflected in many directions.

Certain silver compounds like silver bromide reflect almost all the light that falls on them and are, therefore, used for mirrors. The image that is reflected in a flat mirror is identical to— exactly the same as— the original object, but it is reversed. For instance, when you write the word BOOK on a piece of paper and hold it up against a mirror, its image is seen backwards. That is, the word appears as KOOB in the mirror. This can be explained by the fact that light on a flat surface changes direction.

When light passes from one transparent medium to another, it changes speed and direction. This process is called refraction. In water, the process of refraction explains the apparent shortening of a person's leg or the bending of a stick

Light is a form of energy that can be transferred into heat. You can prove this by using a magnifying glass to concentrate the sun's rays on a piece of paper and burn a hole in it. It is this light energy from the sun that warms the earth and enables living things to grow. Plants get light energy from the sun, while animals get it from the plants they eat.

125 Take A Picture That Can Fly

Some people get revelations in the shower. Others solve puzzles in their dreams. Yousuke Yamada, a lead engineer for the Japanese office-equipment maker Ricoh Co. Ltd., gets his best ideas on Tokyo commuter trains. "I cannot create an idea at my desk," he says. "I like to walk around a crowded train, where nobody disturbs me."

Over the past three years, while his fellow commuters jostled for space or scanned the morning paper, Yamada, 55, devoted his four-hour daily commute to a higher cause— dreaming up the next great consumer gadget. In 1997, Ricoh president Masamitsu Sakurai commissioned Yamada to create a device that would help push his company, which had built its fortunes on heavy office machines, into the forefront of digital technology. The trouble was Sakurai didn't really know what he wanted. "The idea was to develop a product that uses all our senses," says Yamada. "There was no paper, no specifications. Just his wish, his hope."

After reviewing the most promising new technologies—and meditating endlessly on the train—Yamada felt he was prepared to design a digital camera like no other. The fruit of his cogitations is about the size of a videocassette and weighs in at just over a pound. But the genius of the RDC-i700 camera is revealed as its top opens up to display a bright, 3.5-inch touch-sensitive screen, which is a window on the World Wide Web that surfs the Internet, records voice memos, accepts written notes and drawings in 16 different colors, and receives and sends e-mail.

In many respects, such features are not new this year. What makes the i700 an innovation is its wireless Web-publishing capabilities. Thanks to its custom software, users of the i700 can correlate images with specific Web pages and then transmit them to a live website of their choice. Not only can they send photos from, the road, they can also automatically display them exactly where they want them to appear on their website.

"We created the first camera that allows HTML coding, which can be sent to a Web page and instantly published," says the camera's US marketing manager, Jeff Lengyel. After the photographer takes pictures, which are of a very high quality, he selects the photos he wants to upload to his personal website. Users in Japan—where the product was released in September with a price of about $1,500—can transmit images with a tiny wireless modem that slides into a slot on the camera. Ricoh expects similar wireless cards to be available in time for the i700's US release early next year.

Perfect Picture

'Time' magazine also tested the device in order to see how efficient it was, and the engineers, were able to upload a low-quality image to a website in about a minute simply by selecting the desired image on-screen, then hitting a few more buttons to send it through the airwaves. Although they were skeptical at first about browsing the Web on a screen that is no bigger than the size of a drink coaster, they were pleasantly surprised at how easy it was both to enter Web addresses and write e-mail with the slim gray plastic stylus included with the camera.

"The RDC-i700 is an innovative device," notes Christopher Chute, analyst at the high-tech market-research firm International Data Corp. "For the first time, a camera manufacturer has attempted to offer an all-in-one solution for digital-image capture, transmission, display, and storage." Such an invention opens up all sorts of possibilities. Cross-country travelers could wirelessly update their home pages on the road with pictures from their trip. Guests at a family reunion or wedding could post images online just minutes after taking them, so everyone who couldn't attend could see the action as it unfolded. Couples who are looking for a new place to move to could split their house or apartment hunting chores and keep each other up to date on their efforts: If you find something you like, take a few pictures and let your spouse log on at the office or at home to see what you've found.

126 What The Future Holds

When we look back at the fantastic spectacle of scientific progress over the past 3,000 years, it may seem as if nature has yielded nearly all of its mysteries to the unstoppable march of the human intellect.

Our world, which only 500 years ago seemed to be the center of the cosmos, has now assumed its right place in the solar system—and the solar system has found its proper place within the universe. The planet has been examined from its core to the outermost parts of the atmosphere. The fundamental principles of the physical world have become increasingly clear as scientists are able to study black holes billions of miles away, crack atoms and harness their energy, and create synthetic materials that improve on nature's inventory.

A great number of living things have been categorized, but not completely enumerated. The chemistry of plants and animals has been observed, exploited, and even rearranged. One disease after another has succumbed to medical science, and researchers are on the verge of extending human life beyond a century. Yet, for every solution, there has been another puzzle; for every answer, another question.

We can track some cellular processes down to the motion of individual electrons. Yet, there is still a lot to learn about the molecular details of infection, the cellular anarchy called cancer, and the complexities of the immune system. We have found ways of altering the genetic contents of plants and animals, including humans, without undesirable side effects. The process of aging is still in many respects mysterious, and the upper limit of the human life span remains unknown. The amazing complexity of the brain is only beginning to become apparent. We do not know how life arose on this particular world, or whether it might have appeared elsewhere in the universe in some similar—or very different—form.

We can control energy and matter. Yet, we don't really know what gravity is, or what mysterious "dark matter" fills 90 percent of the universe. There are still basic processes to be detected, and new conditions of matter and energy to be observed. Many phenomena that we once thought to comprise incomprehensible chaos are turning out to reflect a perfect hidden order at the heart of nature.

The structure of the center of the earth is still uncertain, and many fundamental properties of the surface are not much better known. For example, we can predict the behavior of an electron down to several decimal places, but often we can't predict a snowstorm or tornado even hours in advance. The complex interactions of land, oceans, and atmosphere that create the planet's climate are yielding only

slowly to science. As a result, humanity still has no conclusive way of knowing just what it is doing to its one and only home world.

In the field of chemistry, no more than a tiny fraction of possible chemical combinations has been examined, and the advent of new materials with extraordinary properties is certain. So far, we have no economically feasible substitute for fossil fuels, even though presumably one must be found within only a few decades.

In sum, the 21st century will be as full of grand challenges to the mind as any that came before. In fact, if the history we have viewed here is a dependable guide, there will be no end to nature's puzzles. Nor any end to the human will to solve them.

127 Artificial Intelligence

Signs of plenty of thinking on artificial intelligence can be found in ancient Egypt, but it wasn't until 1941, when the electronic computer was developed, that technology could finally create machine intelligence. The term artificial intelligence was first used in 1956, and since then artificial intelligence has expanded because of the theories and principles developed by its dedicated researchers.

With the invention of the electronic computer in 1941, there was a big revolution in every aspect of storage and processing of information. This invention was developed in both the US and Germany. The first computers required large, separate, and air-conditioned rooms. They were a programmer's nightmare as it was difficult to even get a program running among thousands of wires. In 1949, the stored-program computer made the job of entering a program easier. The developments in computer science prepared the ground for artificial intelligence.

Although the computer provided the technology necessary for Artificial Intelligence (AI), the link between human intelligence and machines was observed with the "feedback theory" of Norbert Weiner. The most familiar example of the feedback theory is the thermostat. It controls the temperature of an environment by first measuring the actual temperature of the house. Then it compares this to the desired temperature and reacts to the situation by turning the heat up or down. Weiner maintained that all intelligent behavior was the result of feedback mechanisms. His theory suggested that machines could start the function of mechanisms.

In 1956, John McCarthy, regarded as the father of AI, organized a conference in New Hampshire to draw the attention of others interested in machine intelligence to the topic. The Dartmouth conference brought the founders of AI together, and it also served as a preparation for the future of AI research.

Seven years after the conference, AI began to speed up. First, centers for AI research at Carnegie-Mellon and MIT began functioning. Further research was done on creating systems that could efficiently solve problems and on making systems that could learn by themselves.

In 1957, the first version of a new program, the General Problem Solver (GSPS), was tested. It could solve common-sense problems to a great extent. While more programs were being produced, McCarthy was busy developing a major breakthrough in AI research. In 1958, he announced his new development: the LISP language, which is still being used today. LISP stands for LIST Processing, and was soon adopted as the language of choice among most AI developers. Many programs such as SHRDLU, STUDENT, and SIR were developed in the 1970s. During the 1980s, AI was moving at a

faster pace and further into the corporate sector. In 1986, US sales of Al-related hardware and software surged to $425 million. Companies such as Digital Electronics, DuPont, General Motors and Boeing relied heavily on these systems.

The impact of AI in computer technology was strongly felt. An outstanding example was the development of PROLOGUE language by Minsky and Marr. In the late 1980s, a new technology called "the fuzzy logic" was developed in Japan. It had the unique ability to make decisions under certain conditions.

The military put Al-based hardware to the test of war during Desert Storm. Al-based technologies were used in missile systems. AI has also made the transition to the home. Applications for the Apple Macintosh and IBM-compatible computers, such as voice and character recognition, have recently become available. With the growing demand for AI- related technology, new advancements are becoming available. Inevitably, artificial intelligence has influenced and will continue to influence our lives. Steven Spielberg's latest movie, AI, underlines the importance of artificial intelligence as well.

128 Stephen Hawking: Changing Our View Of The Universe

Scientists have long struggled to find the connection between two branches of physics. One of these branches deals with the forces that rule the world of atoms and subatomic particles. The other branch deals with gravity and its role in the universe of stars and galaxies. Physicist Stephen Hawking has set himself the task of discovering the connection. Leading theoretical physicists agree that if anyone can discover a unifying principle, it will certainly be this extraordinary scientist.

Dr. Hawking's goal, as he describes it, is simple. "It is complete understanding of the universe, why it is as it is and why it exists at all." In order to achieve such an understanding, Dr. Hawking tries to "quantize gravity." Quantizing gravity means combining the laws of gravity and the laws of quantum mechanics into a single universal law. Dr. Hawking and other theoretical physicists believe that with such a law, the behavior of all matter in the universe, and the origin of the universe as well, could be explained.

Dr. Hawking's search for a unifying theory has led him to study one of science's greatest mysteries: black holes. A black hole is an incredibly dense region in space whose gravitational pull attracts all nearby objects, virtually "swallowing them up." A black hole is formed when a star uses up most of the nuclear fuel that has kept it burning. During most of its life as an ordinary star, its nuclear explosions exert enough outward force to balance the powerful inward force of gravity. But when the star's fuel is used up, the outward force comes to an end. Gravity takes over, and the star collapses into a tiny core of extremely dense material, possibly no bigger than the period at the end of this sentence.

Hawking has already proved that a black hole can emit a stream of electrons. Before this discovery, scientists believed that nothing, not even light, could escape from a black hole. So scientists have hailed Hawking's discovery as "one of the most beautiful in the history of physics."

Exploring the mysteries of the universe is no ordinary feat. And Stephen Hawking is no ordinary man. Respected as one of the most brilliant physicists in the world, Hawking is also considered one of the most remarkable as he suffers from a serious disease of the nervous system that has confined him to a wheelchair, barely able to move or to speak. Although Dr. Hawking gives numerous presentations and publishes countless articles and papers, his speeches must be translated and his essays written down by other hands.

Hawking became ill during his first years at Cambridge University in England. The disease progressed quickly and caused the young scholar to become depressed. He even considered giving up his research, as he thought he would not live long enough to receive his Ph.D. But in 1965, Hawking's

life changed. He married Jane Wilde, a fellow student and language scholar. Suddenly life took on new meaning. "That was the turning point," he says. "It made me determined to live, and it was about that time that I began making professional progress." Hawking's health and spirits improved. His studies continued and reached new heights of brilliance. Today, Dr. Hawking is professor of mathematics at Cambridge University and a husband and father who leads a full and active life.

Dr. Hawking believes that his illness has benefited his work. It has given him more time to think about physics. Therefore, although his body is failing him, his mind is free to soar. Considered to be one of the most brilliant physicists of all time, Dr. Hawking has taken some of the small steps that lead science to discovery and understanding. With time to think over the questions of the universe, it is quite likely that Stephen Hawking will be successful in uniting the world of the tiniest particles with the world of stars and galaxies.

COMMUNICATION & MEDIA

129 Culture Clash

Ideas about polite behavior vary from one culture to another and it is easy to cause offence or feel offended if you don't know what other cultures expect or what civility means to them. For this reason, all over the world there are cross-cultural workshops which help business people avoid culture clash and misunderstandings when they deal with people coming from different cultures.

Some societies, such as America and Australia, are mobile and very open. People there change jobs and move house quite frequently, so they need to get to know people quickly. As a result, they cannot have very long and deep relationships. In fact, their relationships often last only a short time. Therefore, it is normal for them to have friendly conversations with people that they have just met, and to talk about things that other cultures would regard as private.

At the other extreme are more crowded and less mobile societies in which long-term relationships are more important. A Malaysian or Mexican businessperson, for example, will want to get to know you very well before he or she wants to do business with you. But when you get to know each other, the relationship becomes much deeper than it would in a mobile society.

To Americans, both Europeans and Asians seem cool and formal at first. However, from the perspective of a person from a less mobile society, it is no fun spending several hours next to a stranger who wants to tell you all about his or her life and asks you all sorts of embarrassing questions that you don't want to answer.

In addition to mobile and less mobile societies, there are societies that have 'universalist' cultures. These societies have a strong respect for rules, and treat every person and situation in basically the same way. 'Particularist' societies, on the other hand, also have rules, but they are less important than the society's unwritten ideas about what is right or wrong for a particular situation or a particular person. Therefore, the formal rules are bent to fit the needs of the situation or the importance of the person.

130 The Hope Of Esperanto

In 1887, Ludovic Zamenhof, a multilingual Polish oculist, published a book introducing a new language under the pseudonym Dr. Esperanto, meaning "one who hopes." Zamenhof hoped his invented tongue would become the world's second language. Although that hope is still unrealized, nearly 6,000 zealous Esperantists — the largest gathering ever — from as far away as Japan and Brazil were in Warsaw in 1987 to honor Zamenhof on the occasion of the 100th birthday of his language. They did so with a variety of events, all in Esperanto, plus a visit to Zamenhof s hometown of Bialystok.

Many people assume that Esperanto is a dying language, or a verbal experiment that has simply not worked out. In fact, Esperantists can be found all around the world. Estimates of their total number vary widely, from 1 million to 8 million or more. Marjorie Duncan, 65, a retired Australian school teacher, believes the movement needs more young people. However, she says, they would "rather drive cars or go surfing."

It seems that Esperanto is not a complicated language. It has only 16 easily memorized rules of grammar — no exceptions — and a basic vocabulary built from mostly Indo-European roots. Experts claim that virtually anyone can learn Esperanto in 100 hours or less. Accents always fall on the last syllable of a word. Nevertheless, for some, numerous suffixes and prefixes may complicate matters.

The use of Esperanto probably reached its peak in the 1920s, when idealists welcomed it as one small step toward peace. Some intellectuals viewed it as a solution to the language problem, which they felt contributed to political misunderstandings. In some British schools, youngsters could study Esperanto. However, interest died down after World War II, partly because governments did not support the language, and partly because English was fast becoming the lingua franca of business and travel. Esperantists have urged the United Nations to adopt their language, but the organization already has its hands full with six official ones.

Humphrey Tonkin, president of the Rotterdam-based Universal Esperanto Association, says Esperanto is popular in lands whose languages do not travel well, such as Iran, Brazil, the Netherlands and the Scandinavian countries. A large number of Esperantists are found in Japan, where the language has sometimes been used for discussions by scientists who speak different languages. China uses Esperanto to facilitate communication between speakers of its northern and southern dialects and supports an active publishing program; From People's China, a monthly magazine in Esperanto, is read worldwide. Radio Beijing's Esperanto program is the most popular program in Esperanto in the world.

Many books and masterpieces of literature have been translated into Esperanto, including the Koran and some of Shakespeare's plays. Nevertheless, Mary Davies, an Esperantist who runs a hotel in Heysham, England, complains, "We don't have any light reading."

When they travel, Esperantists wear lapel pins shaped like green stars that signal them as Esperanto speakers, in the hope of meeting fellow Esperanto speakers. They also call up comrades-in-conversation and exchange cassette tapes by mail.

131 Global Tv

A global television channel which will be liked by the entire world population is possible, according to research from a German institute. The author of the research and chief executive officer of the Molln-based Sample Institut, Dr Helmut Jung, says that in order to make it work, the tastes of people in various countries need to be taken into consideration.

A possible global television channel is an ideal, yet, in practice, people in different countries have different program preferences. In the former USSR, 87% of the people who took part in the research wanted to see more full-length films, compared with a global average of 60%. In the Middle East, 81% of the people wanted more home-produced news, as did 79% in Asia. Only about half the respondents from Western Europe, North America and Japan felt they needed more domestically produced news.

In places where programming is left to television controllers instead of political or religious officials, television audiences are generally happy. Jung identified regions where many people were unhappy with programming schedules, including Centraf Europe, the former USSR and Latin America — all having state-run television. In regions such as Western Europe and North America, which have independent programming, audiences were happy.

Despite his confidence that global television will eventually arrive, Jung thinks there is a more realistic alternative for the near future: "Multicultural Regional TV" or MRTV. Speaking recently in New York, Jung said, "I'm convinced that the concept of global television is basically promising and that the process of globalization will continue and will first happen in the area of media and telecommunications. However, I'm also convinced that the idea of global television will be restricted to a limited number of channels and to specific types of programs. There will be more options in the area of regional television within the next few years."

Jung also said that global television's time had not come yet. It would have to omit certain programs due to unpopularity in certain regions which other people might want to see. Viewers still prefer home-produced news, and cultural differences remain. For example, Asian audiences look for education, while Latin Americans and Europeans generally prefer non-violent programs.

Jung's research has been supported by surveys which revealed that European channels such as Eurosport tempted more people to watch television. The presence of international channels, for example, increased the average number of hours of television watched by people in Austria, Germany and Switzerland by 15% and in southern Europe by 3%.

The implications of the globalization of television will be seen in the future. It is certain to strengthen the position of English as the top language for media in the world, and will weaken the status of the languages of economically disadvantaged cultures. It seems that, despite increasing internationalism, national differences will remain.

132 Language: Is It Always Spoken?

Most of us know a little about how babies learn to talk. From the time infants are born, they hear language because their parents talk to them all the time. Between the ages of seven and ten months, most infants begin to make sounds. They repeat the same sounds such as "dadada" and "bababa" over and over again, which is called babbling. When babies babble, they are practicing their language. Soon, the sound "dadada" may become "daddy," and "bababa" may become "bottle".

What happens, however, to children who cannot hear? How do deaf children learn to communicate? Recently, doctors have learned that deaf babies babble with their hands. Laura Ann Pettito, a psychologist at McGill University in Montreal, Canada, has studied how children learn language. She observed three hearing infants and two deaf infants. The three hearing infants had deaf mothers and fathers who used American Sign Language (ASL) to communicate with each other and with their babies. "Dr. Pettito studied the babies three times: at 10, 12, and 14 months. During this time, children really begin to acquire their language skills.

After watching and videotaping the children for several hundred hours, the psychologist and her assistants made many important observations. For example, they saw that the hearing children made many different, varied motions with their hands. However, there appeared to be no pattern to these motions. The deaf babies also made many different movements with their hands, but these movements were unchanging and deliberate. The deaf babies seemed to make the same hand movements over and over again as if they wanted to convey a message. During the period in which the experiment was carried out, the deaf babies' hand motions started to resemble some of the basic hand-shapes used in ASL.

Hearing infants start first with simple syllable babbling (dadada), then put more syllables together to sound like real sentences and questions. Apparently, deaf babies follow this same pattern, too. First, they repeat simple hand-shapes. Next, they form some simple hand signs (words) and use these movements together to resemble ASL sentences.

Linguists—people who study language—believe that our ability for language is innate. In other words, humans are born with the capacity for language. It does not matter if we are physically able to speak or not as language can be expressed in many different ways—by. speech or by sign. Dr. Petitto believes this theory and wants to prove it. She plans to study hearing children who have one deaf parent and one hearing parent. Dr. Petitto wants to see what happens when babies have the opportunity to learn both sign language and speech. Does the human brain prefer speech? Some of these studies of

hearing babies who have one deaf parent and one hearing parent show that the babies babble equally with their hands and their voices. They also produce their first words, both spoken and signed, at about the same time.

The capacity for language is uniquely human. More studies in the future may prove that the sign system of the deaf is the physical equivalent of speech. If so, the old theory that only the spoken word is language will have to be changed. The whole concept of human communication will have a very new and different meaning.

133 Mixed Messages Across Cultures

When people communicate with each other, there is always the possibility of people's not understanding or misunderstanding each other. The danger of misinterpretation is greatest, of course, among speakers who actually speak different native tongues, or come from different cultural backgrounds. The reason for this is that cultural differences lead to different assumptions about natural and obvious ways to be polite.

Anthropologist Thomas Kochman gives the example of a white female office worker who appeared with a bandaged arm and felt ignored because her black colleague didn't say or ask anything about it. The white worker assumed that her silent colleague didn't notice or didn't care. However, the co-worker was not paying attention on purpose, thinking that she might not want to talk about it. He let her decide whether or not to mention it: showing politeness by not imposing. Kochman says, based on his research, ^that these differences reflect recognizable black and white styles.

In another example, an American woman visiting England was repeatedly offended when the British ignored her in situations in which she thought they should have paid attention. For example, she was sitting at a big table in a railway-station cafeteria. A couple began to settle into the opposite seat at the other end of the table. They unloaded their luggage; they laid their coats on the seat; the man asked what the woman would like to eat and went off to get it; she sat at the table facing the American. Throughout all this, they showed no sign of having noticed that someone was already sitting at the same table. When the British woman lit up a cigarette, the American had a reason to reflect her anger. She began looking around for another table to move to. Of course there was none; that's why the British couple had sat at her table in the first place. The smoker immediately put out her cigarette and apologized. This showed that she had noticed that someone else was sitting there, and that she did not intend to disturb her.

To the American, politeness requires talk between strangers who are forced to share a table in a cafeteria, even if it's only a 'Do you mind if I sit down?' or a conventional 'Is anyone sitting here?' although it's obvious no one is. The omission of such talk seemed to her like dreadful rudeness. The American couldn't understand that another system of politeness was at work. By not noticing her presence and not disturbing her, the British couple thought they were showing politeness. While the American expected a show of involvement, they were showing politeness by not imposing.

In the case of an American man who had lived for years in Japan, there was a similar politeness ethic. He lived, as many Japanese do, in extremely close quarters — a tiny room separated from

neighboring rooms by walls. In order to preserve privacy in this most unprivate situation, his Japanese neighbors simply acted as if no one else lived there. They never showed signs of having overheard conversations, and if, while walking down the corridor, they caught a neighbor with the door open, they walked ahead without looking around or showing any sign of noticing anybody around. The American in the example admitted that when a next-door neighbor passed within a few feet without noticing his presence, he felt insulted, like many Americans did. Later, however, he realized that the intention was not rudeness by omitting to show involvement, but politeness by not imposing.

Communication plays an important role in all sorts of relations and the fate of the world depends on cross-cultural communication. Nations must reach agreements, and agreements are made by individual representatives of nations who sit down and talk to each other. Despite the fact that conversations don't usually produce the communication we need, we continue to talk to .each other. In the same way, nations keep trying to negotiate and reach an agreement although it's not an easy task. Woody Allen knows why, and says, in his film Annie Hall, which ends with a joke:

"A man goes to a psychiatrist and says, 'Doc, my brother's crazy. He thinks he's a chicken.' And the doctor says, 'Well, why don't you tell him to see me?' and the man says, 'I would,' but I need the eggs." It seems that's how most of us feel about relationships. Perfect communication is something almost impossible. Yet, we still keep hoping and trying because we need the "eggs" of involvement and interaction.

134 The Visual Media

How do television and the other visual media affect the lives of individuals and families around the globe? The media can be very helpful to adults (and their children) who carefully choose the movies and shows that they watch. With high-quality programming in various fields or" study—science, medicine, nature, history, the arts, and so on —TV and videotapes increase the knowledge of the average well-educated person; they can also improve thinking ability. Similarly, television benefits elderly people who can't go out often, as well as patients in hospitals and residents of nursing facilities. Additionally, it offers language learners the advantage of 'real-life' audiovisual instruction and aural comprehension practice at any time of day or night. And of course, television and video can provide almost everyone with good entertainment — a pleasant way to relax and spend free time at home. Nevertheless, there are several serious disadvantages to the visual media.

First of all, some people watch the 'tube' for more hours in a day than they do anything else. In a large number of homes, TV sets—as many as five or more in a single household—are always on. Instead of spending time taking care of their children, parents often use the tube as an 'electronic baby-sitter'. As a result, television and video can all too easily replace family communication as well as physical activity and other interests.

Secondly, too much TV—especially programming of low educational value—can reduce people's ability to concentrate or reason. In fact, studies show that after only a minute or two of visual media, a person's mind 'relaxes' as it does during light sleep. Another possible effect of television and video-tapes on the human brain is poor communication. Children who watch a lot of TV may lose their ability to focus on a subject or an educational activity for more than ten to fifteen minutes. Maybe it is because of the visual media that some children contract attention deficit disorder (ADD), a modern condition in which one is unable to pay attention, follow instructions, or remember everyday things.

A third negative feature of the media is the amount of violence or horror on the screen— both in real events in the news and in movies or TV programs. It can scare people and give them terrible nightmares; the fear created by media images and language can last for a long time. Another consequence is that frequent viewers of 'action programming' get used to its messages. Thus, they might begin to believe there is nothing strange or unusual about violent crime, fights, killing, and other terrible events and behavior. Studies show that certain personality types are likely to have strong emotional reactions or dangerous thoughts after some kinds of 'entertainment.' They may even copy the acts that they see on violent shows— start fires, carry and use weapons, attack people in angry or dangerous ways, and even worse.

Because of the visual media, some people may become dissatisfied with the reality of their own lives. To these viewers, everyday life does not seem as exciting as the roles actors play in movies or TV dramas. They realize they aren't having as much fun as the stars of comedy shows. Furthermore, average people with normal lives may envy famous media personalities, who seem to get unlimited amounts of money and attention. Also, media watchers might get depressed when they cannot take care of situations in real life as well as TV stars seem to. On the screen, they notice actors solve serious problems in one-hour or half-hour programs-— or in twenty-second commercials.

Yet another negative feature of modern television is called 'trash TV'. These daily talk shows bring real people with strange or immoral lives, personalities, or behavior to the screen. Millions of viewers —including children—like to watch these 'fifteen-minute' stars tell their most personal secrets, shout out their angry feelings and opinions, and attack one another. TV watchers seem to enjoy the emotional atmosphere and excitement of this kind of programming — as well as the tension of the real but terrible stories on TV 'news magazine' shows. What effect does frequent viewing of such programs have on people's lives? It makes television more real than reality, and normal living begins to seem boring.

Finally, the most negative effect of the tube might be addiction. People often feel a strange and powerful need to watch TV or play videotape even when they don't enjoy it or have the free time for entertainment. Addiction to a TV or video screen is similar to drug or alcohol dependence: addicts almost never believe they are addicted.

SPORTS & ADVENTURE

135 IMPS In The Desert

The Imps is the name given to a motorcycle display team which is made up of children under the age of sixteen. The team was founded by Roy Pratt, who is a senior educational welfare officer in Hackney, which is one of the toughest areas of London. It really started by accident. He took a group of children from Hackney to the country as a part of a council-run scheme to help children from rundown inner-city areas. The children found a couple of old motorbikes which they managed to get working again: Roy Pratt taught them a few tricks which he had learned when he used to run motorcycle and horse riding displays when he was a member of the police force. 'It just grew from there' said Roy.

Children join The Imps as young as five and retire at the age of sixteen, but being a member of The Imps is not all fun. They don't spend all their time roaring around on motorbikes. There's a lot of hard work involved in rehearsing and doing the less glamorous jobs in preparation for the shows. As a result, many drop out, but, according to Roy Pratt, the effect on those who do manage to stay with him is dramatic. They have to make a commitment to go to school every day and to stay out of trouble with the police. Neither of these commitments is easy for children in this part of London where truancy, that is to say missing school, and juvenile crime are part of the accepted order. An added benefit is that ex-members of The Imps have nearly all got jobs because many employers appreciate their sense of responsibility which comes from being an Imp.

Six members of The Imps recently crossed the Grand Erg Occidental. This is a 400-mile stretch of dunes, or sand hills, in the Sahara Desert, which had been thought impassable by motor vehicles. The only people who had crossed it were the local tribesmen and they did it on camels or on horseback. The main difficulty, apart from the sun and the heat, was the problem of navigation. They had taken along a satellite navigator, but it broke down early on in the expedition and they had to rely on dead reckoning, which means working out one's position on a map by calculating the distance traveled in a certain direction. This works where there are no obstacles to prevent traveling in a straight line; however, it is a totally different matter in this part of the Sahara where the different kinds of dune make traveling in a straight line all but impossible. Getting over or round or through the dunes obviously meant detours which made navigation extremely difficult. The terrain was so bad that one day they only managed to cover 30 miles in 12 hours.

The vehicles that they used were motor tricycles - motorcycles with three wheels attached to balloon tires. These tires are not very practical to use on ordinary roads, but the extra surface area they gave on the sand meant that the weight of the machine, rider and luggage was distributed over a larger area and the grip was, therefore, much better. They still fell off or the motorbikes turned over, but the

landing was usually soft. They had 27 punctures, one of the riders broke his arm, another lost his tent... but they made it in the end.

136 Sponsoring Sport

The fans cheer as your team comes onto the fields, wearing their brand-new T-shirts bearing a company name. As you're trying to spot your favorite player, your eyes wander onto the billboard on the other side of the field, and you see the name of a well-known product displayed in big letters. Welcome to the world of sport sponsorship.

Sponsorship is about getting the spectators to enjoy the sporting event and, therefore, to buy the sponsor's product. At its simplest, sponsoring sport gives a company a chance to put its name in front of the public so that it is remembered. However, sponsorship can be a more subtle process. If the name of the company or product is on your favorite player, you may, without realizing it, also feel good about the company.

Sponsors like to be linked to success and excellence. As a result, world champions and Olympic medalists are often approached by companies that want them to endorse their products —and some of these sports people make the most of it. They advertise one product rather than another because of the money they are paid, although not many get nearly as much as the million British pounds David Beckham was paid for endorsing Nike shoes.

International matches and championship finals are very popular with sponsors because they are televised, so the sponsor gets good publicity. Sponsors pay for the administration, organization, and expenses of the event, which allows the sportsmen or teams to keep any profit from television fees or ticket sales. Most major events depend on sponsorship' to enable them to take place.

It is not only the stars of sport who are sponsored, however. Amateur teams and individuals can find sponsors from the local community or from national organizations. Sponsorship is given to individual athletes, sports teams arid groups, coaching schemes, and sporting events. Sports Aid, a charity for sport, aims to further the education of young people through the medium of sport. They give grants; that make it possible for younger up-and-coming sports people to buy the best equipment. These grants also help with training and competition costs. Sports Aid is funded by private individuals, professional fundraisers, and large companies. Last year, more than 2,000 grants were given to young sports people involved in 60 different sports, from archery to wrestling.

In addition, there are many sponsors who support achievement schemes for young people. They hope to get credit for encouraging them to take part in sport. So if you have any talent for a sport and would seriously like to improve, you should start looking for a possible sponsor now!

137 The History Of Football

Football is an ancient game, and most cultures around the world have had some form of this game. Football was played in China as early as the second century, and it was similar in some ways to soccer as it is played today. In the Chinese football game, the players used their feet and bodies to move the ball, but never their hands. The goal was a hole in a net made from silk, and the teams competed with each other to kick the ball through this hole. The winners received a silver cup filled with fruit or wine. The losers received a "prize" too: They were beaten up by the winning team!

What were the balls made of? In the British Museum in London, there is an exhibit of a number of ancient balls from various cultures around the world. Thousands of years ago, the Egyptians made balls out of soft leather or fine linen, and they filled them with straw to make them round and hard. In other cultures, the balls were filled with earth, grain, bits and pieces of plants, and sometimes even pieces of metal. The Mayas made their balls out of solid rubber.

Some historians believe that the first balls were actually heads! A group of people would cut off the head of one of their enemies and then use this head as a football, supposedly to celebrate their victory over their enemy and to bring them luck and prosperity; in this way, they could overcome their financial problems. In an ancient story from Great Britain, for example, the storyteller explains how the Britons cut off the head of a Danish invader and later played football with it. There is some evidence that animal heads were also sometimes used as footballs.

Ball games were connected to fertility in primitive societies. People believed that success in ball games would help their crops to grow and help the players to produce more children as well. From the earliest days, tribes divided their players into teams: unmarried men against married men or unmarried women against married women. It was believed that throwing the ball (the symbol of life and fertility) back and forth among these groups would help the players become stronger and produce healthier children in the future.

Football was popular in both ancient Greece and Rome. In the Greek version of football, the players on one team tried to carry a ball across a line in the other team's territory, and the opposing team tried to keep them from crossing the line. This version of football is similar in some ways to today's American football. The Roman football game was like the Greek game. The players had to throw the ball from one to another to get the ball over the other team's baseline. In this game, players were not allowed to kick the ball. Galen, a famous doctor in the second century in Rome, wrote about

how football helped the players become stronger and healthier. Many other Roman writers wrote about how football helped prepare young men for war by teaching them the skills they needed for survival.

In England in the Middle Ages, whole towns played football on certain holidays, such as Shrove Tuesday, sometimes with as many as 500 players at one time. The goals were placed at the opposite ends of the town, and sometimes the game lasted all day. Everything was allowed: You could kick, trip, hit, or even bite your opponent. In fact, you could do anything you wanted in order to get or keep the ball. Consequently, players were often seriously injured. In addition to this, there was a lot of property damage throughout the town. Finally, in 1314, King Edward II made a law saying that people could not play football in the future and that anyone who broke this law would be sent to prison.

This law kept people from playing football for a while, but it was not successful for long because everyone, even priests and monks, had a strong attraction to the game. Finally, in 1603, when King James I came into power, football was allowed again, and people were even encouraged to play it. As time went on, rules were added to the game to make it safer and more orderly, and players were limited in what they could and could not do to get and keep the ball.

Football originally meant "a game played with a ball on foot" —as opposed to a game played on horseback, such as polo. Soccer, as played throughout the world today, is closest to the original football. Rugby, American football, and Australian Rules football all come from soccer and are later versions of the game.

138 Snowboarders Invade The Slopes

From Vermont to California, snowboarders are going down the slopes on 5-foot-long, 10- inch-wide pieces of wood or fiberglass with fixed bindings. The newborn sport, like its cousins surfing and skateboarding, requires alertness and a fine sense of balance to guide the board down the slopes at speeds approaching 30 m.p.h.

The first attempt at snowboarding can be a miserable experience. For the novice, the only controls are stop (sit down) and go (very fast). Fortunately, after a painful start, most newcomers master the art as quickly as they fall down. "By your third day, you can be going down slopes that beginning skiers wouldn't touch," says David Alden, a former amateur snowboard champion.

Some proponents maintain that their sport is safer than skiing. Since there is just one board, the legs can never cross, so there are fewer broken ankles and hips. The injuries that occur are usually bruises to the upper body as a result of falls and occasional collisions with trees and other downhillers.

Some mountain ski resorts are cautious of the board, fearing that adventurous snowboarders might frighten regular skiers. Vail in Colorado and Sugarbush in Vermont are two of the places that have banned snowboarding, but more than 100 ski areas throughout the US allow it. As rentals are quite cheap and the equipment is not very complicated, many resort owners think snowboarding may lure a whole new crowd to try out the slopes. The sport has already achieved a great deal of respect. Next month, for example, the World Snowboard Classic will be held in Colorado, with more than 200 competitors from ten countries participating.

139 Professional Sports

There are two kinds of sports, "amateur" and "professional." The main difference between them is that amateurs do not receive money for competing in sports but professionals do. For example, Olympic athletes are amateurs, so they usually cannot receive money for their participation. The word amateurs comes from the Latin *amare*, meaning "to love"; in other words, amateurs are supposed to play because they love the game. On the other hand, professional athletes are paid to compete, and some of the top professionals earn millions of dollars a year. Professional sports give athletes the opportunity to play sports as a career and to earn and save money for the future. As long as they can continue to play the game well, they can continue to perform. We, as spectators, have the opportunity to watch wonderful performances by our favorite professional athletes for the price of an admission ticket or by turning on the television.

However, there are some problems with professional sports. The main goal of sports is to encourage the development of good character as well as to give pleasure to the participants and the people watching them. Some professional athletes demonstrate admirable skill in playing their game, but their life off the field or the court is not very admirable and, in some cases, shocking and even criminal. Some have been charged with criminal acts, such as rape and using illegal drugs.

What is the role of professional athletes in modern society? Should they be role models for young people to admire, look up to, and imitate, as the early Olympic athletes were? Or do they just have to be top athletes and play their sport well? There is a lot of controversy around these questions. Arthur Ashe, the great American tennis player who died in 1993, criticized the behavior of some of his fellow athletes. He said that many of them did not take their responsibilities as sports stars seriously, and, consequently, they were poor models for young people to follow. Professional athletes do not agree on what their role should be. Charles Barkley, a star basketball player, believes that his role is to be a great basketball player, not a role model for young people. As he said, "I'm not paid to be a role model. I'm paid to destroy the other team in a basketball-game." Barkley believes that what he does in his private life is his own business and should not be important to anyone else. On the other hand, Karl Malone, another star basketball player, disagrees with Barkley. He says that sports stars are role models for people even if they don't want to be. As Malone commented to Barkley, "Charles, you can deny being a role model, but I don't think it's your decision to make. We don't choose to be role models, we are chosen. Our only choice is whether to be a good role model or a bad one."

What do teenagers think about the role of professional athletes in society? They have different opinions about it, just as adults do. Some of them believe that sports stars should try to be role models

in all aspects of their lives because kids look up to them and want to be like them. However, others believe that sports stars are just people, except for their outstanding skill in their sport. They believe that stars should not be expected to be perfect and that whatever they do in their private life is not important and is just their own business. They think kids will try to imitate their performance in their sport, not their behavior in their private lives. In other words, kids will try to play basketball like Michael Jordan, but they won't become gamblers because Michael Jordan is a gambler.

Another dark side of professional sports is the atmosphere of violence that surrounds them. There have been many unfortunate cases of spectators getting into fights and hurting and even killing each other at professional sports events. In soccer, for example, a terrible tragedy occurred at Heysel Stadium in Brussels before the European Cup Finals in 1985. An English soccer team was playing against an Italian soccer team for the European championship. The English fans started a fight with the Italian fans. As the fans pushed and shoved each other against the stadium walls, one of the walls collapsed. As a result, more than 50 people were killed, and many others were badly injured.

Professional sports have become more like business than pleasure. Everything is money, money, money. The team has to earn enough money to pay its expenses. This puts a lot of pressure on the players. They feel they have to win all the time, and winning becomes more important than anything else. In sports, there is a saying: "It is not important if you win or lose; what is important is the way you play the game." In professional sports, this saying is no longer true, unfortunately.

140 Swedish Adventurer Göran Kropp Killed In Fall

Swedish adventurer Goran Kropp, 35, fell to his death on September 30, 2002, while climbing a popular route on the Frenchmen Coulee, in central Washington State. Kropp was ascending (climbing) the Air Guitar route near the town of Vantage when he fell 25 meters onto a rock shelf. Ail of his climbing protection, except for one piece, had been ripped by his surroundings. The local health official reported that he had died of severe head injuries.

Goran Kropp became a worldwide celebrity after the news of his 1996 bicycle journey from Sweden to Nepal appeared in leading newspapers everywhere. He cycled 7,000 miles and left his bicycle on the skirts of Mount Everest. Then he summited Everest without oxygen. After coming back down, he took his bicycle and rode it home to Sweden again. Often referred to as the Crazy Swede, Kropp was recently called 'the most entertaining adventurer on Earth.'

Early one autumn, Kropp agreed to spend a day climbing with Erden Eruc, whom he had met at a presentation a year before. On a Monday morning, Kropp met Eruc at the Frenchmen Coulee. It was the first time Kropp was in the area, so, on that day, Eruc secured the climbing rope[9] for Kropp to hold onto and climb, according to a written report he prepared after the accident. "Goran said the climbs were really challenging," Eruc said of the Swedish adventurer's first few climbs that morning. "He hadn't expected them to be so hard. We agreed to go crack-climbing[10] together the following year so that he could become an expert in the field, and he felt relaxed."

After Kropp had made a few climbs, the duo turned their attention to the Air Guitar crack, a difficult ascent, and together they decided that Kropp would climb it. According to Eruc's report, Kropp climbed most of the route and had reached the final and most difficult section of the climb when he fell. Eruc heard commotion above and realized Kropp was falling. In what he describes as a quick sequence, Eruc saw the first piece of protection pull out, felt the rope become slack, then pulled to take in the rope to prevent Kropp from falling. He was unsuccessful, though, and he heard Kropp fall onto a small rock shelf just below him. Looking down, he saw Kropp lying on his back, his helmet (hat made of strong hard material) shattered. Eruc climbed down and found that Kropp was bleeding heavily from his ears and nose. "I have no doubt that he died immediately after he fell," he wrote in the accident report. Falls like Kropp's, in which several pieces of protection fail, are unusual but not unheard of, according to Matt Stanley, a magazine editor. Positioning the protection pieces carefully can decrease the chances of an accident.

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[9] climbing rope: a piece of strong thick cord used by mountaineers

[10] crack climbing: climbing mountains by placing hands and feet in narrow spaces in the rock

Kropp's fame as a mountaineer had increased before his death together with his popularity as a fascinating motivational speaker. "It is not just that he stood up there and chronicled his events," said his friend, Kaj Bune. "He was able to communicate what is in the mind of a human being that makes him go out and look for adventure. He was the greatest, brightest light the world of adventure has ever known."

ANIMALS

141 Pandas

Pandas are large animals with big heads, heavy bodies, rounded ears and short tails. They are famous for their black and white markings. The legs, shoulders and oval patches around the eyes are black, and the rest of the coat is white. They have thick, oily, woolly fur. It is waterproof, and keeps them warm in cold forests.

Male pandas are large. Adult male pandas stand 100 centimeters high, and weigh about 100 kilograms, but female ones stand 80 centimeters high. They rarely reach 90 kilograms.

Females often give birth to two babies. They are called cubs. Usually one of them dies. A newborn cub weighs 85 to 140 grams. It is pink, hairless and blind. Its eyes open when it is 6 to 7 weeks old. Cubs grow very slowly. They stay with their mothers for two years.

Pandas live in cold and rainy bamboo forests in the mountains of western China. They move to low places during cold winter months to keep warm, and to high mountains in summer to stay cool. There is food all year round in these forests, and this makes pandas' lives easier because they need to eat 18-20 kilograms of food every day. For this reason, they never hibernate in the winter. Bamboo is the most important plant in their life, and they love it. They use their front paws to hold the bamboo, so they usually eat while sitting. They spend at least 12 hours each day eating bamboo. Pandas need a lot of water. They get much of this water from bamboo, but they also need to drink fresh water from rivers almost every day.

There are about 1,600 pandas left in the wild, and about 160 pandas live in zoos and breeding centers around the world, mostly in China. Scientists are not sure how long pandas live in the wild, but they are sure these animals live longer*in zoos than in the wild. There are zoo pandas as old as 35 years of age.

142 Cats

Some people hate cats, and some people love them. The old Egyptians and the Chinese loved their cats. Cats had a very important place in those cultures. Today, in every country, a lot of people have cats too. Cats are very useful animals for people. For example, they are the worst enemies of mice. When there is a cat in a house, you won't see many mice around.

Cats are not difficult pet's to have. First, they stay very clean and they don't make the house dirty. Second, cats like being alone, so you don't have to spend a lot of time with them. Third, they don't make a lot of noise, so you don't have many problems with your next-door neighbors.

143 The Arctic Fox

The Arctic Fox lives in the far north, mainly in the Arctic Circle. It is small, about the same size as a cat, with short legs and short rounded furry ears. Its tail is about 30 cm long. Its thick fur coat helps it live in freezing temperatures. Thick hair on the pads of its feet helps it to walk on the ice. Near the end of summer, its grayish brown coat begins to grow thicker. The color of the fur becomes gray and then white. This makes it very hard to see the fox in winter. The female Arctic Fox has 4 to 11 pups in late spring. Both parents hunt to feed their babies. When they can't find meat, they bring fruit, seaweed and fish eggs. At two weeks, the babies open their eyes. At three weeks, they go outside and begin to explore. When the young foxes grow older, they learn how to hunt and become independent. The Arctic Fox has to be careful because Polar Bears kill it, and people hunt it for its beautiful fur coat.

144 Sharks: Useful Hunters Of The Sea

Most people are afraid of sharks, but they usually do not know very much about them. For example, there are 350 kinds of sharks, and all of them are meat eaters. Some sharks are very big, but some are very small. For example, the whale shark is 50 to 60 feet long, but the dwarf shark is only 6 inches long. The shark species is 100 million years old. In fact, the first species of sharks lived at the same time as the dinosaur.

Today, sharks live in every ocean in the world, but most sharks live in warm water. Sharks do not have ears, but they can "hear" sounds and movements in the water. Any sound or movement makes the water vibrate. Sharks can feel these vibrations, and they help the sharks find food. Sharks use their large eyes to find food too. They eat sick fish and animals, so they keep the oceans clean. Scientists want to learn more about sharks for many reasons. For example, cancer is common in many animals and human beings, but it is rare in sharks. Scientists want to find out why sharks almost never get cancer. Maybe this information can help prevent cancer in people too.

145 Gentle Giants Of The Earth

They live with their mothers, sisters, aunts, nieces and nephews, and an old grandmother who is the head of the family. They show emotions such as joy, sorrow, anger, patience, and friendliness. They become excited when they meet old friends. Who are these people? In fact they are not people; they are elephants!

Elephants are the largest land animals on Earth. An adult male African elephant can weigh six tons and be four meters tall. Elephants usually have two tusks. These are long, pointed teeth that extend from the elephant's mouth. Over the years, the elephant ate more and more food and grew larger teeth. An elephant's tusks grow all through its life. Elephants use their tusks only for protection. They do not use them to kill because elephants do not eat any meat. They eat only plants. An elephant shows signs of old age at 50 years and it may live 60 years or more, but there are no examples of 100-year-old individuals.

Elephants are the giants of the animal kingdom. However, the size of an elephant is not its only uncommon feature. The most interesting characteristic of an elephant is its trunk. An elephant uses it to smell, wash, eat, drink, 'talk' and hug. It also uses it to lift things. It can lift up to about 450 kg., but it does not carry heavy loads on its trunk, or with its trunk. It places the load across the tusks and holds it in place with the help of the trunk. However, elephant babies do not know how to use their trunks, just as human babies are not born with the ability to walk. Learning to walk is not easy, and it takes a lot of practice. In the same way, it takes time for baby elephants to learn how to use their trunks well.

Over the last 20 years, people have studied elephants and how they live. Consequently, we are beginning to understand these fascinating giant creatures. Unfortunately, their number is quickly decreasing—there were about 1.5 million African elephants in 1975; now there are fewer than 600,000. People are killing elephants to make money by selling their ivory tusks. This ivory is used to make bracelets, rings, and other ornaments. However, precautions should be taken to stop, or limit this ivory trade because tourism is also important to the economy of many African countries and elephants are a part of the tourist attraction. Many people travel to Africa to enjoy its beautiful countryside, learn about its culture and see its unusual animals. Hopefully, with cooperation among countries around the world, elephants may continue to live, and everyone can see these fascinating giants of the Earth.

146 The Emperor Penguin: Aptenodytes Forsteri

True to its name, the emperor penguin is the largest of all penguins and one of the heaviest of all birds. Scientifically speaking, Aptenodytes means 'featherless diver' and refers to the emperor penguin's incredible ability to dive deeper than any other bird on earth. However, contrary to this name, emperor penguins have 4 layers of feathers to protect them from the Antarctic weather. Forsteri, the emperor penguin's species name, honors Johann Reinhold Forster (1729-98). Forster was a naturalist on Captain James Cook's voyage around the world and was the first person ever to describe penguins.

From a distance, emperor penguins look like little men wearing tuxedos. They are easily recognized by their black cap, blue-gray neck, orange ear-patches, yellow breast and white belly. Emperor penguins may be as tall as 1.15 m and can weigh as much as 40 kg and they are the largest of the 17 penguin species. Their 4 layers of feathers are all covered in a greasy waterproof coating. The feathers defend them against the chilling Antarctic weather, just like a mammal's fur does. Like seals and whales, which both live in cold water, emperor penguins also have a thick layer of fat below the skin for extra insulation.

In the Antarctic winter, temperatures can fall to more than 40 degrees below zero; freezing winds can reach speeds of 200 km/hr. Under these conditions, feathers and fat just aren't enough and the emperor penguins must depend on each other to survive. Unlike other types of penguins, which are all territorial, emperor penguins don't mind sharing their space with others. To keep warm, emperors gather in large groups called huddles. Inside a huddle the temperature can rise as much as 20 degrees above the outside air temperature.

Emperor penguins are 'sociable' animals and live in crowded groups called rookeries or colonies. There are approximately 45 colonies around Antarctica, which range in size from 200 to 50,000 penguins. Colonies of emperors gather on the sea ice (ice that forms naturally on the sea) around Antarctica and use icebergs for shelter — especially from strong winds. Amazingly, emperors are the only birds in the world that usually spend their whole life without ever coming to land.

Emperor penguins live off the coast of Antarctica. Unlike all other penguins in the Antarctic, emperor penguins do not migrate to warmer climates for the winter months. In fact, they are the only penguin species which is able to survive the harsh Antarctic winters and breed during some of the worst weather conditions on earth. How the chicks (baby penguins) can survive in such difficult conditions is a mystery.

Emperor penguins have a most abnormal breeding cycle. The breeding season occurs through the winter months and is amazingly coordinated with the formation and the break up of sea ice. Their breeding season is so perfectly coordinated with nature that the chicks become mature enough to leave their parents by the summer. This is when the weather gets warmer, the ice on the sea begins to break up and food becomes more available. After learning to swim and feed themselves, sometime between December and February, the chicks leave their parents.

It is not known for sure how long emperor penguins usually survive in the wild. It is estimated, however, that after the emperor chicks reach adulthood they have a good chance of surviving another 20 years or more.

147 Language For Chimps

All animals communicate with others of their kind. Many of their communicative acts are essentially reflexive, as when a bird persuades others to sing, or the croaking of a frog initiates this act in other frogs. These behaviors for the most part serve to signal dangers, interest in mating, and territorial claims.

Among primates, research has shown some communicative acts which are similar to those employed by human beings. Chimpanzees communicate by bowing, kissing, and touching. They also have a few vocal signals, such as calls and grunts. Because of these similarities, scientists have always wondered whether the chimpanzee, our closest relative from the standpoint of evolution and neurological development, has the capacity to acquire language.

Some years ago, Winthrop and Luella Kellogg decided to study this and reared a chimpanzee in a normal human environment. Gua, a seven-month-old female chimpanzee, was adopted into their household to be treated in the same way as their ten-month-old son Donald. Shortly after the experiment began, Gua became slightly superior to Donald in word recognition. As time passed, however, the child caught up with the chimp, and by the end of the period of investigation he was significantly ahead in word recognition. Throughout the experiment, Gua remained nonverbal in word usage. Her ^communication included some gestures, such as wriggling her lips when she wanted apples, but no words. Her only vocalizations were sudden barks or cries in moments of excitement, fear, or pain. Donald, on the other hand, passed through the normal cooing and babbling stages and by the end of the research, said his first words. He said "da" meaning "down" and "bowwow" for the dog, and he used a few other words. However, as his parents emphasized, he did not show language mastery either. Unfortunately, this research had to be discontinued after nine months, due to the increasing strength and enormous agility of Gua, that is, her being too active, around the house.

It is possible that Gua's failure to develop words, as well as prior cooing and babbling, was due to her limited speech mechanisms, rather than her mental ability. No primate, as far as we know, has demonstrated coordination of mouth and throat mechanisms comparable to that displayed by a young child in speaking. Therefore, it was concluded, to find out whether the chimpanzee is capable of learning human language, different approach is required.

For this purpose, 35 years later, another chimpanzee, named Washoe, was reared entirely apart from human speech. This twelve-month-old female was exposed only to American Sign Language (ASL), used by the deaf. During the first four years of this experiment, ASL gestures were taught to

Washoe using the best methods known to science. Operant conditioning, modeling, and direct manipulation of the hands were used, and thus Washoe's training differed markedly from that of Gua years earlier. For example, whenever Washoe imitated a sign that was modeled by one of her experimenters, she was immediately rewarded. Furthermore, when she brought her hands together in a pattern resembling the ASL sign for 'more', she was rewarded again. Through this operant conditioning, an acceptable sign for 'more' was established. In these ways, Washoe acquired a larger and larger vocabulary, learning at a more rapid rate as the experiment progressed. Like a normal child, rather than becoming more confused as more words were added, she seemed to learn them more easily and had a vocabulary of 160 signs at the end of the tour-year experiment. More importantly, Washoe made 294 different two-sign combinations, and comparative studies have shown that 78 percent of these combinations are similar to the earliest two-word combinations of children. This finding suggests that four-year-old Washoe, who began training at the age of one, has been using language much like a child approximately 16 to 27 months old. On this basis, Washoe's achievement is remarkable, despite the fact that she falls behind a human child as regards the ability to speak a language.

HISTORY

148 How New York Began

American Indians were the first to live on the island of "Manhattan", which means "hill island" in their language. They lived there for hundreds of years. Today this island is the centre of New York City. There aren't any hills now and there aren't any Indians, but their old home is still called Manhattan Island.

In 1609, an Englishman named Henry Hudson sailed his boat, the Half Moon, across the Atlantic Ocean from Holland. He wanted to find India. Instead, he found the river that took him to Manhattan Island. Now, that river is called the Hudson.

Hudson and his seamen made friends with the Manhattan Indians, and soon more people came from Holland. These Dutch people built a small town in the south of the island. They named the town New Amsterdam, after the city in Holland. Then, in 1626, Peter Minuit, from Holland, bought all of Manhattan Island from the Indians. He gave them some cloth and beads worth about $24.

In 1664, the English sent soldiers to Hudson River. They also sent a letter to Peter Stuyvesant, the Dutch governor, to inform him that they wanted Manhattan. Stuyvesant was very angry about the letter, but he knew that the English soldiers were very strong. In the end, the Dutch left New Amsterdam and the English came.

The leader of the English soldiers who took control of the city was the Duke of York, so the English named the city after him and changed it to New York. New York remained English for over one hundred years. Then, in 1776America won its independence from Britain, and the United States was born. From 1776 to 1784, New York was the capital of the United States. Interestingly, some people around the world still think that it is the capital of the United States today, but it isn't.

149 The California Gold Rush

Although there have been many Gold Rushes in world history, the California Gold Rush was a unique event. Unlike other places, the gold- in California was both plentiful and easy to get—at least at first. The result was great change in California, America, and the entire world.

Gold was first discovered in California by James Marshall in early 1848 while he and twenty men were building a sawmill for John Sutter, one of the wealthiest people in the region. Marshall took the samples to Sutter's fort, where they tested the shiny metal as well as they could. With the help of an encyclopedia, they concluded that it was gold. However, neither man was happy about it. Sutter was building his empire based on agriculture. He didn't want the competition that gold-seekers might bring, and Marshall had a sawmill to build. He thought gold hunters would just get in his way. So they agreed to keep the discovery a secret. However, it wasn't long before stones of gold reached the surrounding countryside. Yet, there was no rush because people thought it was just another fantastic tale. The Gold Rush began with Sam Brannan, a skilled craftsman. It made him the richest person in California, but he never mined for gold. In the streets he shouted about Marshall's discovery. As proof, Brannan held up a bottle of gold dust, which started the rush for gold. He sold shovels, axes, and pans. A metal pan that sold for twenty cents a few days earlier, was now available from Brannan for fifteen dollars. In just nine weeks he made thirty-six-thousand dollars.

By 1849, thousands were on the way to California. Some traveled by ship around the tip of South America, which often took more than six months. They faced problems such as diseases, lack of drinking water, and boredom. Some others took shortcuts across Panama and Mexico. However, they also encountered some difficulties. Malaria and Cholera were common and traveling through the rain forests of Central America in the 1840s was an adventure itself. Those who survived to see the Pacific had to wait for weeks, or months, in overcrowded, disease-infested coastal towns. Americans who lived in the central states traveled overland on the already established Oregon-California Trail. This road was much shorter than the sea route, but it wasn't faster. The main difficulty was a lack of water. The price for water could go as high as $100 per drink. Those without money were sometimes left to die.

The gold seekers were called "49ers" because most left home in 1849. Importantly, 49ers were not uniquely American. Quite the contrary, the California Gold Rush was a world event, attracting gold seekers from Mexico, China, Germany, France, Turkey, and nearly every other country in the world.

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Many people became very rich either by mining gold or by selling the things that the gold- seekers needed. However, it didn't last forever. By mid 1849, the easy gold was gone but the 49ers kept coming. There was still gold in the riverbeds, but it was getting harder to find. In time, frustration and disappointment led to crime. Many gave up the dream and went home.

As the gold became more difficult to extract, great changes in California took place: By the early 1850s, miners came together in informal companies to dam the rivers, reroute the water and expose the gold underneath. Later on, groups of miners were replaced by corporations. By the mid 1850s, most of the miners who remained were employees. The mining techniques that the mining corporations developed destroyed the rivers and caused California's first environmental disasters. It took years to stop the destructive' techniques, but by then the Gold Rush had changed California in every way.

150 The Great Wall Of China

The Great Wall of China is more than 2,000 years old, and is one of the great wonders of the world. It can be seen from Earth orbit but, contrary to legends, is not visible from the moon according to astronauts Neil Armstrong, Jim Lovell, and Jim Irwin. Stretching 4,500 miles from the mountains of Korea to the Gobi Desert, it was first built to protect an ancient Chinese empire from marauding tribes in the north. However, it evolved into something far greater —a boon to trade and prosperity and ultimately a symbol of Chinese genius and will.

The Great Wall is actually a series of walls built and rebuilt by different dynasties over 1,000 years and while they often served the same purpose, these walls reflected the worlds —both natural and cultural— in which they were erected. For all its seeming timelessness, the Great Wall is an emblem of China's evolution.

The Wall was first in the form of individual sections, which were later connected during the Qin dynasty (221-206 BC). Qin Shi Huangdi, the first emperor of Qin, forced peasants, enemies, and anyone else who wasn't tied to the land to go to work on the wall. He garrisoned armies at the Wall to stand guard over the workers as well as to provide early warning of invasion and a first line of defense. The tradition lasted for centuries from one dynasty to another. Each added to the height, length and elaborated the design mostly through forced labor.

It was during the Ming dynasty (1368-1644 AD) that the Wall took on its present form. It was enlarged and renovated over a 200-year period. The watch towers were redesigned and modern cannons were mounted in strategic areas. The Portuguese had found a ready market for guns and cannons in China, two of the few items of trade that China didn't already have in abundance. The Ming Emperors, having overthrown the Hun dominance and expelled their Mongol rulers of the North, devoted large portions of available material and manpower to making sure that they didn't return. The security was strengthened with the construction of small garrison towns and blockhouses.

The construction of the walls required great effort. In addition to that, there weren't many farms or trade towns nearby to provide ease, relaxation and food. Supplies were always short and chancy, particularly in winter, which made the conditions more difficult.

The Wall served well. Only when a dynasty had weakened from within were invaders from the North able to advance and conquer. Both the Mongols and the Manchurians were able to take power, not because of weakness in the Wall but because of weakness in the government and the poverty of the

people. They took advantage of rebellion from within and stepped into the void of power without extended wars.

Although some of the sections of the Wall are now in rums or have disappeared completely, it is still one of the most attractive landmarks of the world.

151 English

English is spoken by more than a quarter of the world's population. It is spoken as a mother tongue in the UK, in former colonies such as Australia and New Zealand, and by the vast majority of the North American population. It is a second or official language in most of the former Empire, for example, Ghana and Singapore, and it is studied as a foreign language all over the world. This has made it a truly international language: it is the language of shipping and aviation, of science and technology, and of commerce. But how did the language -spoken by the population of a small island in the Northern Hemisphere reach such widespread use?

English has not always been the language of the British Isles: until the fifth century AD the British Isles were populated by a race called the Celts, whose language lives on in Celtic languages such as Gaelic and Welsh, the former being spoken in Scotland and the latter in Wales. In 449 AD the British Isles were invaded by Germanic tribes from the coast of what is now North Germany and Denmark. One of these tribes -the Angles- gave their name to the language that was to become English. During the next 150 years, these warriors drove the Celts to the western and northern extremities of the islands and settled in the area now known as England. For nearly three hundred years their language spread.

Between 750 and 1050 AD, the Vikings, from present-day Norway, colonized the north of England; while it is difficult to evaluate the effect of Norse on Old English because of the similarity of the languages, certain traces remain, such as place names ending in -*wick*, and words starting with *sk*-, such as sky. The Norman invasion of 1066 changed the course of the English language by bringing to England both Norman French and Latin, thus dividing the country linguistically between the educated classes with French or Latin and the common people with only English. As a result of this linguistic mix, English has become a language with a huge vocabulary full of nuances, often with three or four ways of expressing the same idea.

Its introduction to the New World in the 17th century resulted in this language becoming the second oldest version of English—and the most widely spoken—American English. In 1620, the Pilgrim Fathers, escaping to a land of religious freedom, left Plymouth on The Mayflower and settled in Massachusetts. Many other migrations followed and more settlements were founded on the north-eastern seaboard. In the 1720s, another large group of immigrants arrived on the New England coast from the northern part of Ireland, fleeing from religious discrimination. These farmers were not well received in New England, and moved further south to Pennsylvania, from where they moved once more to the western frontiers, this time to buy their own farmlands. After this the two Englishes—in the

British Isles and in America—developed along their own paths, giving us the two distinct dialects we know today.

Early pioneers did not only head west; they also went east and south. In 1770, James Cook sailed The Endeavour into what is now called Queensland, Australia. In 1788, the first group of immigrants from England arrived and set up the first colony. In the late 18th and 19th centuries a large number of Irish also immigrated to Australia. Also in the 1700s pioneers traveling south established a colony in the southern lands of Africa, where English remained the dominant imperial language until the late 19^ century, when the Boer War established the predominance of Afrikaans in South Africa. English is now considered a second language for the majority of the white population in South Africa.

6 The colonization of America, Australia, New Zealand and South Africa were all very much at the expense, linguistically as well as in other ways, of the indigenous races—American Indians, Aborigines, Maories and Zulus respectively. However, a different type of colonization—based on commerce rather than immigration—took place in other areas, particularly South-East Asia. In India, settlements were first established in 1600 by the East India Company, and by the end of the 18th century it controlled most of the commercial life in India. In the early 19th century the company was dissolved, but by this time India had become the keystone of the British Empire, and the Indian population had begun to learn English in order to find employment in the new order. In India, English now shares the status of official language with Hindi, and it is spoken by over 70 million people—more than the entire population of the British Isles.

IMPORTANT PEOPLE

152 J.Y. Cousteau

"The reason I love the sea I cannot explain — it's physical. When you dive, you begin to feel like an angel. It's liberation of your weight." J.Y. Cousteau

Jacques-Yves Cousteau was born in Saint-Andre-de-Dubzac, France, on June 11, 1910. He always loved the water and spent much of his early childhood near it, swimming and tinkering with gadgets such as underwater cameras and mechanical toys. In his early teens, Cousteau became fascinated with films. He saved his money and bought a home movie camera. In high school, Cousteau became bored with school and began to cause trouble. As a result, his parents sent him to a strict boarding school. After high school, in 1933, he entered the French Armed Forces. It was during this time that he began his underwater explorations and began working on a breathing machine for longer dives. In 1937, Cousteau married Simone Melchoir, and they had two sons. Two years after their marriage, Cousteau fought for the French in World War II. During the war, he still found time to continue his underwater work. In 1943, he and French engineer Emile Gagnan perfected the aqualung, which allowed a diver to stay underwater for several hours. Divers used the aqualung to locate and remove enemy mines after World War II.

Cousteau was named a *capitaine de corvette* of the French Navy in 1948, and two years later he bought the boat Calypso, part ocean-going lab and part yacht, which would soon become synonymous with Cousteau and his underwater adventures. To finance his trips and increase public awareness of his undersea investigations, Cousteau produced numerous films and published many books. In 1956, with the help of Calypso and her crew, Cousteau's position as the world's most famous marine biologist was cemented when he received an Academy Award for his undersea documentary, The Silent World.

Because of his many projects, Cousteau retired from the French Navy. In 1957, he became director of the Oceanographic Museum of Monaco and founded the Undersea Research Group at Toulon. In 1968, Cousteau was asked to make a TV series. Of the 120 documentaries Cousteau completed in his lifetime, this television series, called The Undersea World of Jacques Cousteau, was the most important one. This series brought unforgettable images into millions of homes and contributed to a deeper understanding of a part of the world few people ever visit. In 1974, Cousteau started The Cousteau Society to protect ocean life. The membership of this non-profit group has grown to include more than 300,000 members worldwide. On January 11, 1996, the Calypso sank in Singapore harbor. When Jacques-Yves Cousteau died on June 25, 1997, the world lost more than just an esteemed biologist and oceanographer.

153 Orson Welles

The Beverly Hills Hotel is one of Hollywood's most celebrated meeting places for people in the film business. It was here that film director Orson Welles met American journalist John Rosenbaum for a long interview. Their six-hour meeting resulted in one of the finest biographies written about Welles. Rosenbaum's book, published in the late 1970s, gives us a lot of information about the life of this complex man.

Welles was born into a respectable middle-class family and became famous as a piano virtuoso in his childhood. In his teens, he wanted to be a painter, but while he was in Ireland he had to earn money, so he started acting. Then he became a theatre director and made a name for himself with stage productions such as "Julius Caesar". However, it was only after a successful period on the radio that Welles won a contract with RKO Pictures and began his career in the cinema.

Rosenbaum's book suggests that all this may surprise people who think of Welles as the maker of Citizen Kane, the famous film which some critics still refer to as the best film ever made. They say that a director can make such a film only at the end of his career. Citizen Kane looks as though it was made by somebody with a lifetime of experience in the cinema. Actually, when it was made, Welles was inexperienced in cinema and extremely young — he was only 25.

There is no doubt that the film is remarkable, but it owes its success not only to Welles but also a skilled group of people who helped him. Greg Toland, perhaps Hollywood's best cameraman, helped Welles to film it. Welles worked on the screen play with the respected writer Herman Mankiewicz. He knew the editor and all the actors well, and had a good relationship with them. He believed that the director must think of himself as somebody at the service of the actors and the story.

None of Welles' later films became more successful than Citizen Kane. Critics thought other projects could not match the success of his first film. This made him feel that Americans did not like him. He spent more time in Europe than in Hollywood, where he only made a few films. He had a difficult time collecting money for these few films because his films did not sell well. He became overweight and started to make money by acting in films he hated. However, he continued to bring a certain quality to everything he did. He died of a heart attack at a friend's house in California at the age of seventy.

154 Alfred Nobel: A Man Of Peace

The headline in the newspaper announced the death of Alfred Nobel on April 13, 1888. The reporter called him a salesman of death, "The Dynamite King," because he had invented the powerful explosive dynamite. In fact, Alfred Nobel's dynamite business had made him a rich man. The newspaper story continued, giving Alfred Nobel's age, nationality, and other information about his business. However, the words "The Dynamite King" were all that the 55-year-old Swedish man read.

Alfred Nobel put the newspaper down. No, he wasn't dead—his brother Ludwig had died the day before, and the French newspaper had made a mistake. All the same, Alfred Nobel was disappointed. Was this the way the world was going to remember him? He didn't like that idea at all. He had spent his life working for peace in the world and he had invented dynamite to achieve this aim. He hated violence and war. He believed that if countries had the same powerful weapons, they would see how impossible war was, and wars would end. In fact, this was a popular idea of his day.

Alfred Nobel believed that he had invented dynamite at a perfect moment in time. Before the invention of dynamite, a lot of people working in the field of construction lost their lives because other explosives were dangerous to use. They needed a safe, powerful explosive like dynamite to blow up stone in order to construct buildings, dams and roads. The use of dynamite saved the lives of workers and, thus, is considered a turning point in the history of construction.

Nobel was very upset about the image that the world had of him, but he did not know what to do about it. He thought about this problem for years. He wanted to think of the best way for people to use his fortune of nine million dollars after his death. Then, in 1895, an adventurer named Salomon August Andrée decided to make a journey to reach the North Pole. People all over the world were excited about Andrée's plans, which continually appeared in newspapers in those days. Nobel read about his plans, too, and had an inspiration. He thought he could use his fortune to encourage people who work for the good of the world. He wrote his Last Will and Testament. In his will, he told people to use all his money for a yearly award to honor leaders of science, literature and world peace. He stated that these leaders could be men or women of any nationality.

Alfred Nobel died on December 10, 1896, at the age of 63. He was unmarried, and had no children. People all over the world wondered who was going to get Nobel's money. They were surprised when they learned about Alfred Nobel's plan to give yearly prizes in the fields of physics, chemistry, medicine, literature, and peace. The first Nobel Prizes were given in 1901, and they very

soon became the greatest honor that a person could receive in these fields. In 1969, an award for economics was added.

The report of Alfred Nobel's death had been a mistake, but the decision that he made because of this error gave the world the image he wanted. Alfred Nobel established the Nobel Prizes, and the world thinks of him the way he wanted to be remembered: Alfred Nobel- a man of peace.

155 A Peaceful Revolutionary

Today, when people think about revolutions and their leaders, they think about people like Fidel Castro, Mao Tze-Tung, Ayatollah Khomeini or Nelson Mandela. Some of these leaders were extremely successful, like Mustafa Kemal Atatürk, but others were complete failures, like Danton. One of the most powerful revolutionaries in the history of mankind was Mahatma Gandhi. His ideas influenced both his own country and the world.

Gandhi was born in India in 1869. His father was a minister in the government of Gujarat. As his father wished, Gandhi became a lawyer. His mother was a deeply religious Hindu, and her beliefs strongly influenced Gandhi throughout his life. Gandhi was a Hindu, but the religious ideas of the Jains (a small, peaceful religious group) also affected him. They were the source of his most important principles: non-violence, religious tolerance and fasting.

When Gandhi was a young man, he went to England to study law. His stay in England was very important because he met many prominent British intellectuals there. They introduced him to many new, Western ideas. In 1893, he went to South Africa to practice law. His experiences during his first days in South Africa greatly affected him. The Whites there treated the Indians and Blacks very badly. While he was speaking in court during a trial, he could not wear his turban, a white piece of cloth worn on the head. While he was traveling on a train, he had to leave the first-class compartment because he was not White. He took these as personal insults. In 1894, the government of Natal (one of the states of the Union of South Africa) decided to end the political rights of the Indians. Gandhi started a campaign against this policy. This was the beginning of his political life. He used a special political method of non-violent resistance and civil disobedience. This disobedience had to be peaceful and he should protest against the police non-violently.

After living abroad for more than twenty years, Gandhi returned to India and entered politics there. In 1919, the British government of India (India was a British colony then) began to put Indian nationalists in prison without trial. For the same reason, Gandhi was also in prison for two years. While he was there, political feelings in India changed. Before he went to England, the Hindus and the Muslims were working together to make the British leave India. However, later, religious differences separated the two groups. Gandhi believed that religious tolerance was very important for the success of India's goal of independence from Britain. In 1924, he fasted for a period of three weeks until the Hindus and Muslims began working together again. In other words, he did not eat anything at all during this time. They stopped fighting because they loved and respected Gandhi and returned to political cooperation.

Gandhi not only fought against the British but he also fought against social problems in India. He tried to protect the poorest people — the untouchables. These people had no political or social rights before Gandhi's time. He introduced new ideas to them. They decided to sell clothes and tools they had made as a means of earning a living. These reforms boosted the economy of the country. He played a major role in introducing a new educational system, which greatly helped the untouchables because they had no schools before this time.

Although Gandhi was successful in putting social reforms into effect, he was unable to solve the problem of religious intolerance. Because the Hindus and Muslims could not live together peacefully, the British colony divided into two states, India and Pakistan, in 1947. There was a massive forced migration of people according to religion between the two new countries. During this time, there was much violence, and unfortunately, Gandhi also became a victim of it. A young Hindu fanatic shot and killed him in 1948.

The world still remembers Gandhi as a great leader and thinker. He mixed Eastern and Western ideas. People throughout the world are still using his political method of non-violent resistance to gain political rights. Many people think that Gandhi was not only a hero but also a saint, a truly good man.

156 Sir Ernest Shackleton, The Explorer

Two of the most difficult places to explore on Earth are the North and South Poles because of the extreme weather conditions there. There are many stories of bravery and endurance in the history of Polar exploration. One of the most extraordinary was Sir Ernest Shackleton's journey to the seas of the Southern Hemisphere.

Shackleton, an Irishman, was born in 1874. He worked on merchant ships for some time before he became an officer in the British Navy. In 1901, he joined Captain Robert Scott, another famous explorer, on his first Antarctic expedition. Their final aim was to reach the South Pole, but they couldn't. In fact, this was not possible until 1912. In 1908, Shackleton went on a second expedition and reached Latitude 82° 23' South on January 9, 1909. He was the first man to reach that far south.

Finally, in 1914, Shackleton became the leader of his own expedition. He wanted to cross the Antarctic continent from the Atlantic side to the Pacific side. Unfortunately, his ship Endurance, got stuck in an ice pack, which carried the ship northwards for ten months before it finally crushed the ship.

The explorers and seamen on the Endurance were able to get into two small whaleboats before the ship sank. They were able to save only a small amount of equipment and food. They drifted northward among the ice pack for five mote months until they finally reached Elephant Island. On the island, they had only their boats for shelter. They caught seals and lived on seal meat for many months. No one knew that they were even alive.

When the weather improved on Elephant Island, Shackleton decided to go to get help. He chose five of his fittest men and took one of the whaleboats. The other 22 men were not strong enough to make the journey, so Shackleton decided that he would have to leave them behind and rescue them later. Although they had very little food, Shackleton managed to cross one of the world's stormiest seas. He had to sail almost 2,000 kilometres to reach the Island of South Georgia, the nearest island on which people lived.

However, Shackleton's problems did not end when they reached South Georgia. They landed on the wrong side of the island, away from the whaling station. They were too weak to go to the other side by boat, so Shackleton decided to cross the island on foot. They crossed over the snowy mountains and reached the whaling station in 24 hours. It was a great success considering the fact that a British army team followed the same route in 1980, and it took them longer to do this, despite their modern equipment.

The story is still not finished! There were still 22 men on Elephant Island. While they were waiting for Shackleton, they almost lost hope. They had many difficulties. Shackleton attempted to rescue them four times, but he had to give up each time because of bad weather. Finally, he was successful the fifth time — a full two years after the unlucky expedition started.

After Shackleton and his men returned to England, he began organizing another expedition. Unfortunately, he never completed the journey. He died while he was trying to get to the Antarctic again in 1922. His men buried him at sea, the proper place for such a courageous man who had so many adventures at sea.

RESREATION & LEISURE

157 The Virtual Beach But Real Fun

From Japan, the country that brought you the virtual pet and the virtual pop star, comes the latest leisure idea: the virtual seaside resort. This is the Ocean Dome at Myazaki, southwest of Tokyo, the biggest artificial indoor beach in the world, where overstressed Japanese office workers can kick off their shoes and walk on the beautiful cool white sand. Yet, it is not real sand—it's fake, made entirely from crushed stone.

In fact, everything under the dome is fake, from the 140-meter-long beach to the air temperature—kept at a steady 30°C by an incredible giant, ultra-modern central-heating system. If that's too hot for you, you can order an attractive plastic palm tree to provide shade. With fake waves and fake sunshine, but not fake crowds, the Ocean Dome has become such a craze that the average Japanese office worker usually has to share it with about 10,000 other sun seekers.

The fake sea covers about three times the area of the beach and has 15,826 tons of water— that's about the same as ten Olympic swimming pools. It is kept at a constant temperature of 28 °C.

But why spend so much money on a man-made beach when the real thing is free? Well, bathing off the Japanese coast isn't much fun because the sea is cold, polluted, and full of sharks.

And after that, what could be better than a run on the ski-slope? Just half an hour from downtown Tokyo, there is a huge artificial ski-slope where even more overstressed workers can practice their skiing on perfect, powdery snow—indoors, of course!

158 Niagara

Niagara is a perfect holiday destination and it is one of the world's most popular tourist attractions. It means different things to more than 18 million visitors. To families, Niagara is the Niagara Falls State Park. There is so much to see in the park. You can enjoy a walk, visit the huge aquarium, dine at the Top of the Falls Restaurant or bring the children to the new Discovery Center with lots of activities. To sportsmen, Niagara is more than 40 golf courses and 30 private campgrounds. Also, fishermen love Niagara. They can go boat-fishing on Lake Ontario and Lake Erie and ice-fishing in the bays around Port Dalhousie and Jordan Harbor. Niagara is very famous among young couples. Each year, thousands of couples go to Niagara hand-in-hand to start a new life. They can have a beautiful and enjoyable wedding ceremony at a reasonable price. To newlyweds, Niagara is the honeymoon capital of the world.

To almost everyone, Niagara is the most dynamic four-season destination in the world. The long winters can be cold, but the trees with lots of snow are wonderful to look at. Christmas is unforgettable there and, of course, in the spring and summer, flowers are everywhere. The autumn season is wonderful. People enjoy the cooler temperatures after a summer of hot weather. They travel to see beautiful autumn leaves.

Niagara has more than 14,000 hotel rooms and lots of bed and breakfast homes to suit every need and budget. Visitors can have a view of Niagara Falls from their window and watch ships from around the world.

Niagara is also becoming famous as a dining destination. There are about 450 restaurants. They serve locally-grown food products with local wines.

If shopping is an important part of their holiday experience, visitors will love Niagara. Shopping in Niagara is a lot of fun. From large shopping centers to attractive boutiques, from factory outlets to small souvenir shops, Niagara Falls is a shopper's dream come true.

159 The Hebrides Islands

The Hebrides Islands are in the north-west of Scotland. Not many people live there because it is difficult to make a living in the Hebrides. The land is not good for farming—the people on the Hebrides Islands cannot grow fruits or vegetables there. The Hebrides Islands are not for everyone, but if you like unusual places, these islands can be very interesting to visit. The winters are long, cold and wet. On the other hand, the summers are short, and even summer days are not hot and are often too windy. The water is too cold for swimming. There are not many trees but a lot of rocks. Sometimes the view from the top of the hills is like pictures of the moon. Yet, there is beauty in this wild place. From the beach, you can often see all the way to the top. From the top, you can see far out to the other islands and the open sea. The colors, too, are fantastic. Blue is everywhere. It is in the sky and in the sea. It is in the small flowers that grow on the islands. In the spring, there is also green. In the summer and autumn, there is purple, and often the air is soft and gray with clouds and rain.

In these islands, you forget about everything. You forget about your work, and city problems like noise, dirt and traffic. The nights are quiet, since the restaurants close early, and there is not much nightlife. There are not even many hotels. Most visitors stay in guest houses, or 'Bed and Breakfast' places as they are called in Scotland. These are really people's homes. They get money from the tourists for the night, and they serve breakfast to their guests. These homes may be simple, but guests are usually comfortable there. You can meet some friendly people of the islands in this way. It is also a way to learn more about life on the islands.

You do not feel much like a tourist in the Hebrides. There are not many historic places. There are no museums and only four or five small shops. In fact, there is not much to do on the Hebrides Islands, but people still visit the Hebrides. They come to walk in this peaceful place. They come for the quiet beauty and the scenery.

160 The New Image Of Museums

In recent years, there have been many changes in the way museums present their exhibits to the public. The days of large, dusty rooms full of glass cases with 'DO NOT TOUCH' signs on them are long gone, together with free admission. Until recently, most museums in Britain did not charge admission fees. They received a grant from the government that covered the cost of running the museum. However, these grants have been abolished or reduced. Consequently, many museums now charge for admission and need to attract large numbers of visitors in order to produce the income to maintain the building, pay the staff, finance research, and buy new exhibits. In order to persuade people that it is worth paying for a quite expensive admission ticket, museums have tried to make their exhibitions brighter and more appealing. Many museums, especially those devoted to science and technology, now have 'interactive exhibits,' which means that you can, in fact, touch the exhibits. For example, you can learn how a television camera works by actually using one, or how to operate the controls of an airplane and watch the wings and tail move. Such exhibits appeal strongly to children and encourage them to visit the museum. One of the biggest changes to take place in recent years is that large numbers of teachers are now employed by museums. Their task is to prepare material that makes the museum interesting to children^ and young people and to advise the museum officials on how to create strong links with schools and colleges.

Museums have also introduced new features that appeal to adults. For example, you can join, for an annual fee, a society linked to your favorite museum that will enable you to visit the museum without paying or to visit at times when it is normally closed, so that you can then admire the exhibits when the crowds have gone. These societies usually publish regular newsletters to inform the public about the upcoming exhibitions. Indeed, because of their need to increase their income, many museums can be hired for social events a room full of dinosaur skeletons, old locomotives, or mummies makes an interesting setting for a party. Many museums now have impressive cafes and restaurants. In addition to these, they have large gift shops selling books, reproductions, and models. These are often more crowded than the museum itself. Museums also seek commercial sponsorship as another way of increasing their income.

Nowadays, some museums create a realistic environment into which the visitor can enter. An example of this kind of museum is Jamestown in New England, where a 17th century village has been re-created. There are actors in 17th century dress performing 17th century tasks. If you speak to them as you wander around, they will reply using 17th century English accents and vocabulary. At Blists Hill Open Air Museum in England, an entire street from the early 19th century has been re-created, and the

visitor can enter commercial and industrial sites from the time of the Industrial Revolution and observe working machinery and old methods of production.

161 The Magic Of The Silver Screen

On 28 December 1895, in a cafe in Paris, the Lumiere brothers, Louis and Auguste, gave a public show. They showed a motion picture for the first time. This event, hardly noticed at the time, marks the beginning of one of the world's major entertainment industries. The earliest films were very short, just snippets in fact, but the audiences were easily impressed. They were very pleased to watch them. Early film makers liked the scenes of wild animals attacking the audience and those which showed cowboys shooting straight at them. One film by the Lumiere brothers showed a train arriving at a station. It caused some of the audience to flee, that is, to escape in terror, believing that the train would hit them.

Technical development was very rapid, i.e., quick, which made films even more attractive. By 1914, feature films were up to two hours long and most of the techniques used by modern film makers had been discovered. Color films were made in the early 1900s, although they did not become common until the 1940s. Experiments with sound began as early as 1896, but the first film with synchronized sound was 'The Jazz Singer' (1927). Until that time, live piano music accompanied performances of silent films. One of the disadvantages of 'talkies' is that if you can't understand the language, you can't understand the film if it is not sub-tided or dubbed. Back projection was being used by 1913 and is still used very effectively in modern films such as 'Superman' (1978). Back projection involves shooting a background scene, projecting that scene onto a screen and then filming the actors in front of the screen. In this way, the viewers get the impression that Superman is flying over a landscape that has, of course, previously been filmed from an aircraft. Special effects of various kinds, including the use of models, were introduced by Georges Melies in his fantasy film 'Voyage to the Moon' (1902). Another film that used models effectively was 'King Kong' (1933). The gorilla, which seemed to be as tall as a house, was in fact a 40 cm model. With the technique of stop action (in which the film is started again), first used by Georges Melies, King Kong was made to move fairly realistically. Sometimes models are life-size, like the shark in 'Jaws' (1975).

During the first half of the 20th century, going to the cinema was a very popular activity, and audiences were huge. In other words, a great number of people watched movies. From the 1950s onwards, however, audiences declined and many cinemas were forced to close as more and more people bought television sets. The film industry introduced several technological innovations against television, such as ultra-wide screens, stereophonic sound, and, less successfully, films that could be seen in three dimensions if special glasses were worn. Nowadays, films are technically advanced, and this developed technology is advantageous, since it provides an experience that television cannot match.

162 Cinema

The origins of cinema as we know it lie in a machine patented in 1891 by Thomas Edison the kinetoscope. This machine rotated rapidly showing different frames, thus giving the impression of a moving picture. Early films were produced solely to show off the ingeniousness of the machines that projected them, and were only one or two minutes long, but by the early 1900s films started to tell stories. During the years of the First World War, American cinema flourished, and technical innovations were made. By 1927, the-use of sound on film became commercially viable, and the film The *Jazz Singer* which was recognized as the first successful sound movie, was released.

It was in the late 1920s that the Hollywood golden era really began. With the advent of commercial film-making in the early 1900s, various film production companies had started up in the United States in fierce competition with each other. Many of these companies became associated with stars still popular and famous today, for example, Charlie Chaplin, who became a founder in 1919 of United Artists. By the 1930s, most of these studios were in financial difficulties because of the Depression. They had to make certain compromises to survive, which in part led to the development of film genres. A genre is a number of films, all containing characteristics in common, including sets and1 stars. Certain studios started producing a number of films from one genre in order to use the same sets, and to use contracted stars who were becoming popular with audiences. For example, Warner Brothers was associated with a large number of gangster films and Universal with horror films, while others were associated with melodramas or musicals. It was this studio system that typified the golden age of Hollywood, but by the 1950s it was somewhat in decline, with a stronger European film industry and the rising popularity of television hitting their box-office takings.

One continuing feature of the studio-system is that of the film star. Studios vied with each other to find and contract popular film stars as a way of increasing audience share. Some of the biggest stars of the 1930s and '40s were closely associated with particular studios, for example, Rita Hayworth with Columbia. Through the 1940s and '50s the popularity of stars such as Humphrey Bogart, Marilyn Monroe, and John Wayne continued to grow. Film stars became part of people's everyday lives and began to take an interest in other areas, for example, politics. As everyone knows, Ronald Reagan, a movie actor of the '40s and '50s, was voted President of the US in 1980!

Actors are not the only stars of the film industry. Certain film directors have achieved star status in the past, such as Orson Welles, whose innovative Citizen Kane is the only film to appear consistently in the critics' top tens, and Alfred Hitchcock, who really gave the thriller genre its name with films such as Psycho and Frenzy. Contemporary directors are equally as popular, and are finding success in areas other than feature films, for example, television and pop promotional videos.

Not all cinema comes from Hollywood. Much early European cinema has, in fact, had a lasting influence on Hollywood with, for example, the low-key lighting and strange camera angles of German Expressionism being transferred to Hollywood 'film noir.' Apart from Hollywood cinema, over the last 40 years we have seen very strong film industries emerge from many countries. In some cases, these herald new movements, for example, the French New Wave and Italian Neo-Realism; in others, they feature particular directors, such as Ingmar Bergman in Sweden and Akira Kurosawa in Japan. In fact, while most people believe Los Angeles to be the biggest 'production village,' that honor goes to Bombay, India, which has the most prolific film industry of any country in the world.

In many countries, film-makers take their role in society more seriously than they do in Hollywood. European cinema focuses on contemporary issues, such as the sociology of the inner city, violence, poverty, the psychology of marriage, and racism. Possibly the most striking developments in the film industry over the years, however, have been those in technology and special effects, bringing us images of space travel and strange creatures in films such as Star Wars, and the mixture of reality and animation in Who *Framed Roger Rabbit?* This film did little more than to carry on the tradition of the greatest cartoon film-maker of all time — Walt Disney, who was one of the most financially successful producers ever.