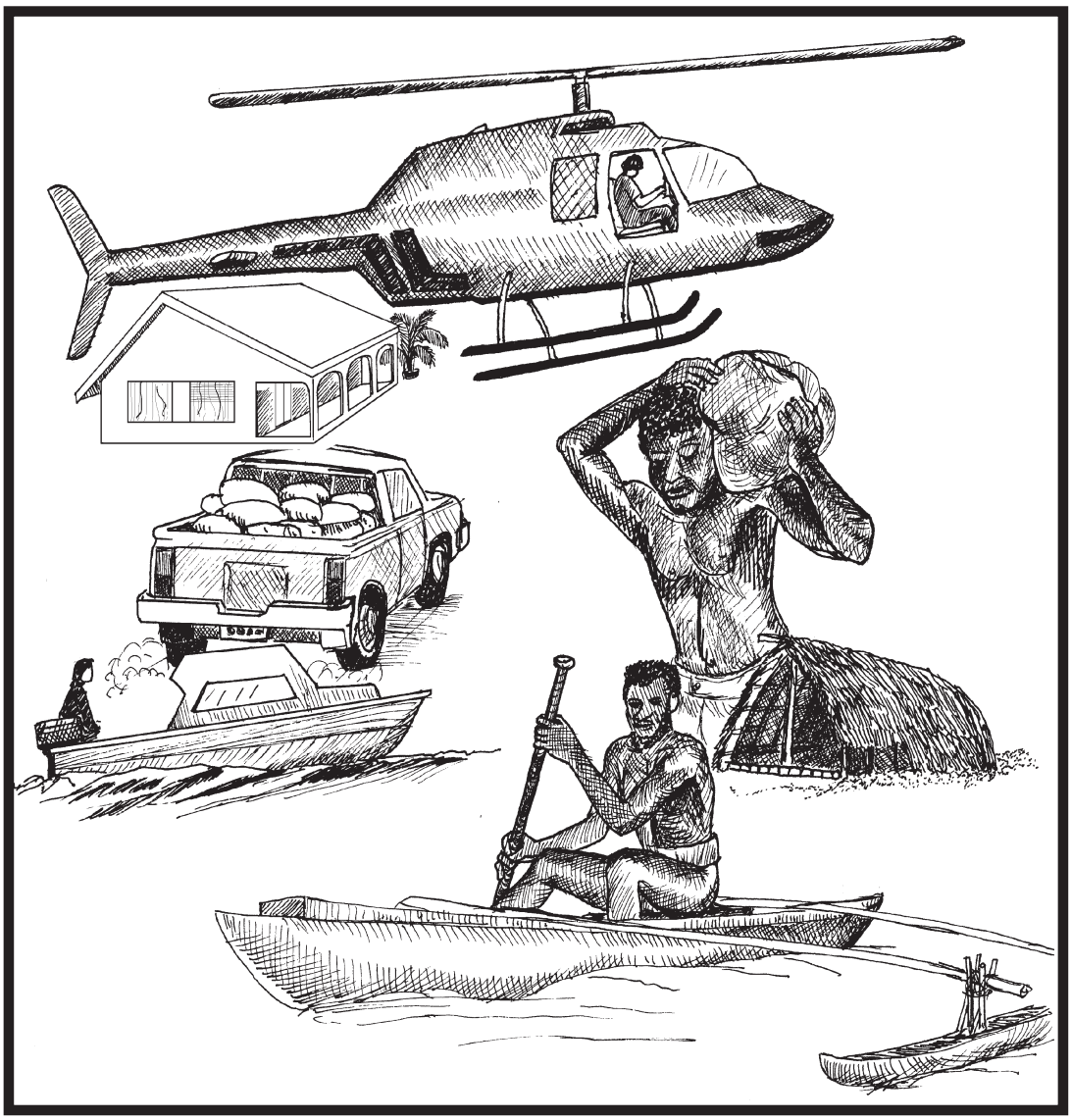
OUR CHANGING SOCIETY



SOCIAL SCIENCE **YEAR 10**

OUR CHANGING SOCIETY

Student's Book
Year 10

Ministry of Education
Port Vila
Republic of Vanuatu
1998

Second edition 1998
Revised by Charles Pierce, following recommendations from the Social Science workshop held at Matevulu College in April 1995.

This book was first published in 1985.

This revised edition has been prepared by the Ministry of Education under the auspices of the Primary and Secondary Education Project with support from the World Bank (Credit 1964-VAN).

Contents

CHAPTER 1
INTRODUCTION

This book will look at some of the changes that have occurred in people's lives in recent times. It will bring together a lot of the information and ideas from previous books, but concentrate on change itself.

In earlier books, you heard about changes in customs, behaviour and family life (***Learning to Live in Vanuatu***), changes resulting from urbanization (***Living in Towns***), and changes connected with the growth of population (***Population Education***). The present Book will look at changes in our way of living, and some of their main **causes**. It will try to show you that changes often bring about **conflicts** between different groups or individuals, and that there are various ways of resolving such conflicts. You will see that the results, or **effects**, of change may be good or bad, depending on your own point of view. You will notice also that change does not stop: one change leads to another kind of change, and so on.

There are four main ways in which change is brought about in **society**:

1. By the application of science and **technology**

A

2. By the **deliberate** action of individuals, groups and organizations

B

3. By the spread of people, goods and ideas

C

4. By alterations to the **natural environment**

D

ACTIVITIES

1. *For each of pictures A, B, C and D:*
   a. *Say what is shown in the picture*
   b. *Explain how people's lives have been affected*
2. *Describe any two changes that have occurred in your village or town since you were born. State what you think caused each change and what its results have been.*

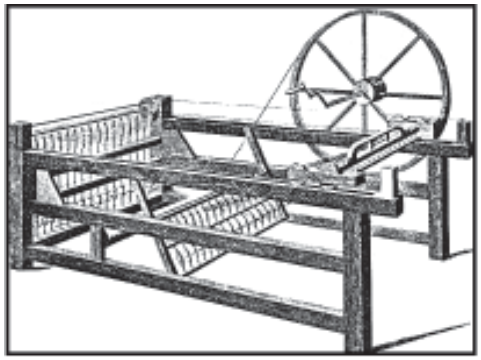
CHAPTER 2
CHANGE BROUGHT ABOUT BY SCIENCE AND TECHNOLOGY

The Industrial Revolution

Humans have been around on this earth for about 2 million years. Yet in all our long history, the biggest change in our daily lives has taken place only in the last 200 years. This change in the way people live and work is mainly due to improvements in the way machines were powered, and is known as the **industrial revolution**.

The new machines made use of **steam power**: power made by heating water until it boils, and keeping the steam in a confined space in order to build up pressure that can be used to move a piston or a wheel. It was found that the type of rock known as **coal** was cheap and suitable for heating up water in the new steam engines. At the same time, a supply of **iron ore** was needed in order to make into steel, and hence manufacture the new machines themselves.

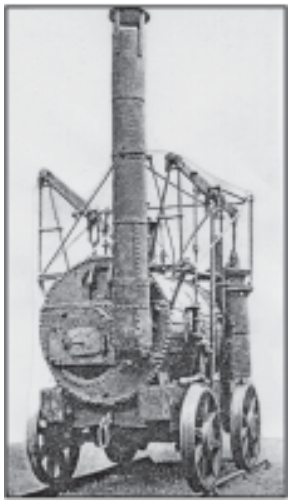
The new power-driven machinery was too large and noisy for people's homes, so special work houses, or **factories**, were set up, usually where coal and iron ore were available. Much larger quantities of goods could be made than ever before.



An early machine - Hargreaves' "Spinning Jenny"

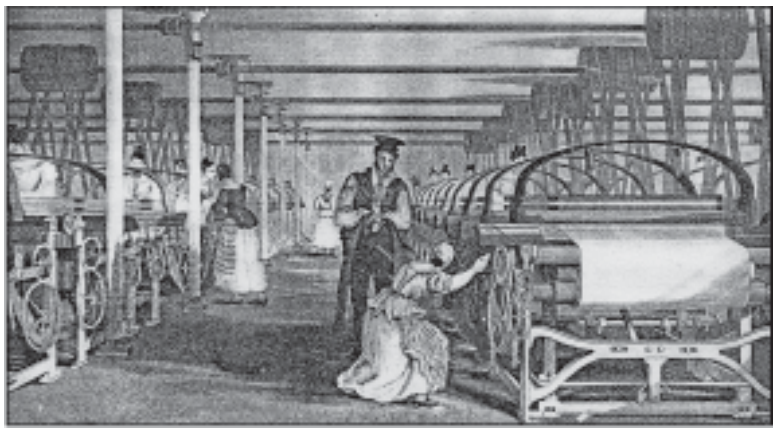
The new method of manufacturing began in England in the 18th century (i.e. between 1750 and 1800). Factories grew up on the coalfields, people migrated from the agricultural areas to work there, and *towns* grew up rapidly. The early factories made cotton and woollen clothing.

The rapid growth of industry meant that larger and larger amounts of coal, iron ore, other raw materials and finished products had to be moved from one place to another. Canals were built. Better roads were constructed, and the application of the steam engine to transport led to the birth of a new method of travel - the railway.



"Puffing Billy" - the world's first railway engine

You can see that inventions and the growth of various activities - **textile** manufacture, coal mining, iron and steel making, engineering and transport - all affected one another and led to further development. By 1850, England claimed that it was the "Workshop of the World"! With the new methods, English manufacturers could make goods more cheaply than anyone else. For example, they could import cotton from America, make it into cotton cloth, and sell this cloth in India at a lower price than the price charged by local craftsmen!



Women at work in a power-loom weaving factory, approximately 1840

After 1850, other nations quickly copied and developed Britain's new methods of production - the U.S.A., France, Belgium, Germany, and later on, Japan. By 1900, Britain was no longer the leading industrial country. During the 1920s, the Industrial Revolution spread to Russia. Since the Second World War, it has begun to affect China, India and many **developing countries**.

All over the world, most machines now make use of electricity or petroleum as their source of power. Steam power has declined in importance.

How the Industrial Revolution changed people's lives

1. Working conditions

When the Industrial Revolution began in Europe, factories were very unpleasant places in which to work. Read the following description by a British writer in 1824:

> ***".....** Some of these factories employ thousand of miserable creatures, who are kept, 14 hours each day, locked up, summer and winter, in a heat of 30° C..... The rules which they are subjected to are such as no negroes had to endure..... The door of the work place is locked, except for half an hour at tea time. The work people are not allowed to send for water to drink in the hot factory..... For a large part of the time there is a horrible stink of gas to assist in the murderous effect of the heat. In addition, mixed with the steam there are the dust and what is called 'cotton-flyings' or 'fuzz', which the unfortunate creatures have to breathe. The sad fact is that men are rendered old at 40, children are deformed, and thousands of them slaughtered by T.B. before the age of 16.*
>
> *(W. Cobbett, in* **"***Political Register***")**

Discipline was very strict in most factories. No talking was allowed in working hours. Anyone 5 minutes' late for work had his or her pay cut!

Child labour was used at first. Sometimes children as young as 4 years were sent to work in the coal mines and textile factories, although the normal age for employment was 9.

Gradually, however, laws were passed to make factory conditions better. In 1833, for example, the British Parliament passed a law to limit the weekly working hours to 48 for children under 13 years!

Hungry factory children scrabbling for food in a farm yard just outside the factory gate

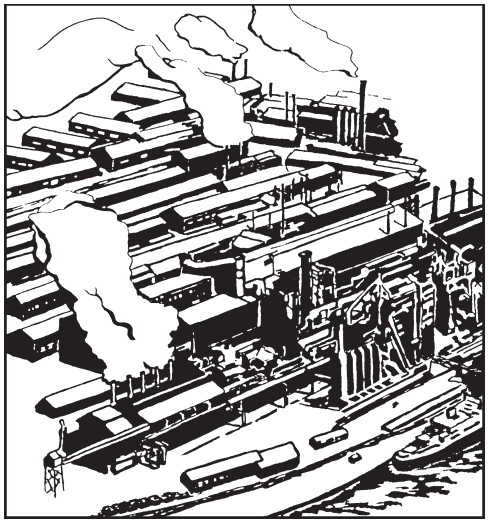
As the Industrial Revolution spread to other countries, working conditions grew better. Today, most factories in European countries, U.S.A. and Australia have only a 35-hour week for their adult workers. But people in Japanese and other Asian factories work longer hours, and child labour is still used in some countries, for example Thailand and Brazil.

The problem with most factory work is that it is so boring. One person does not make the whole product from start to finish. The manufacture of the finished product is divided up among the workers, each of whom uses his particular machine to make only a part. This is called the **division of labour**. Each person may do only one task, but repeat it over and over again.

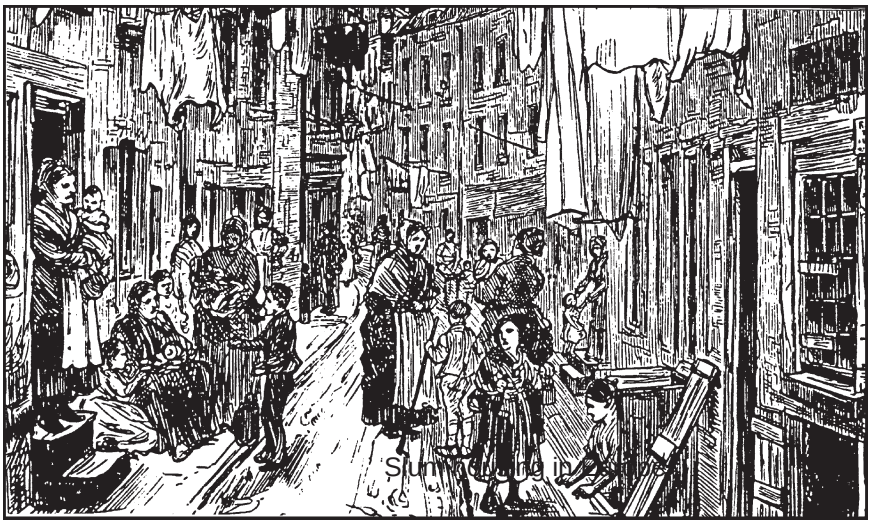
At the same time, working in a factory gives a person a **wage**, with which he can buy the goods and services that he wants.

2. Slum housing

Early factory owners built cheap accomodation for their hundreds of workers. The dwellings were usually dark, crowded, unsanitary, and often polluted by waste and smoke from the factories.



The factories quickly became surrounded by rows and rows of crowded housing, which often turned into **slums**. This happened wherever the Industrial Revolution spread, and is one of the worst features of **industrialization**.



Slum housing in Asia

3. More goods for less work

But in the long run, the use of power-driven machinery led to a huge increase in the volume of goods produced. These goods could be sold and money obtained.

The Industrial Revolution led to a big rise in the standard of living of people in Western Europe and in countries such as U.S.A., U.S.S.R., Japan and Australia. For such people, hours of work are shorter, and wages are higher, than they were in the past. These countries may be considered as the rich, or **developed**, nations of the world.

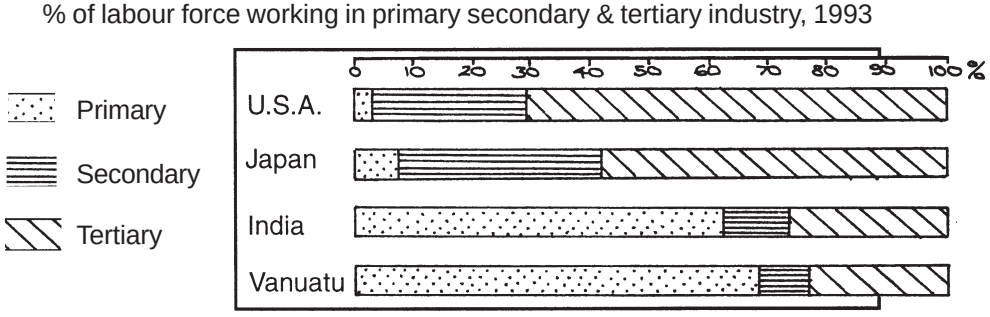
Living standards in various countries, 1993

	U.S.A.	AUSTRALIA	JAPAN	RUSSIA	BRAZIL	INDIA
Annual income per capita in US$	24,750	17,510	31,450	2,350	3,020	290
Annual energy	9,958	7,436	4,145	Not available	773	313
No. of T.V. sets per 1,000 people	815	486	620	308 (est.)	213	32
No. of passenger cars per 1,000 people	588	435	263	65	104	2

4. Changing patterns of employment

The Industrial Revolution produced tremendous changes in agriculture too. Because machinery was now used for clearing and ploughing land, and for planting and harvesting of crops, fewer workers were needed on the land. Therefore, large numbers of people moved to towns and cities to find work. Once the Industrial Revolution took place in a country, the number of workers in primary industry decreased, while the number in manufacturing and service industries increased rapidly.

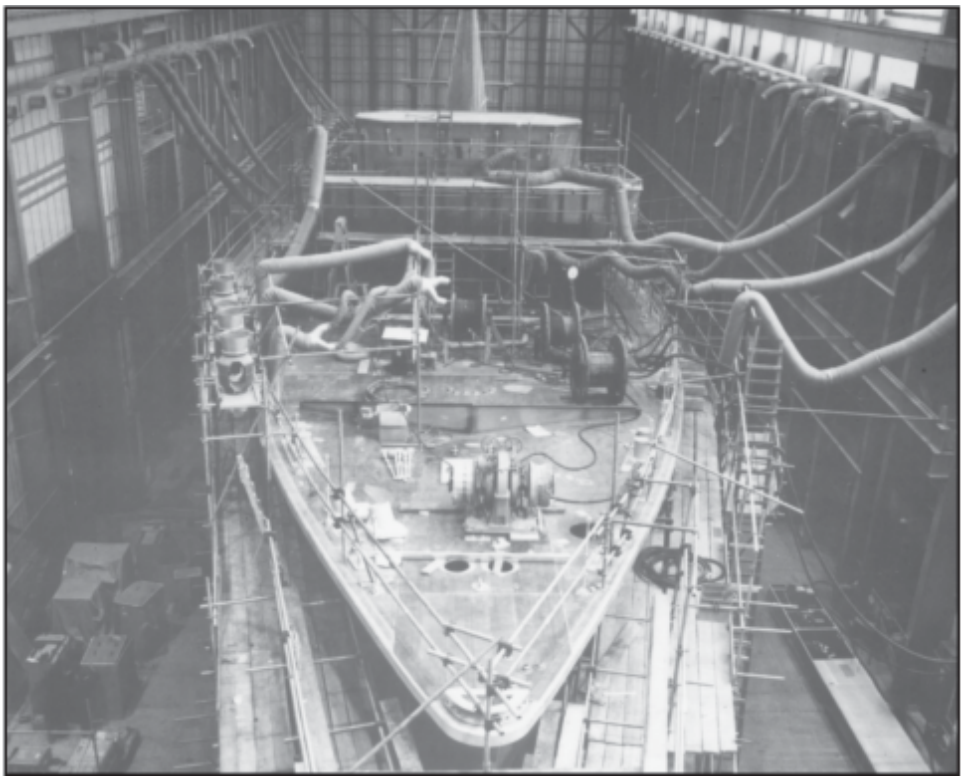
Today, all leading industrial nations have only a small percentage of their labour force employed in agriculture and primary industry. Study the histograms below and notice the difference between U.S.A. and Japan on the one hand, and India and Vanuatu on the other:



5. New products

Ever since the time when scientists and clever people made the first machines, such as the "Spinning Jenny" and the "Steam Engine", there has been a constant stream of inventions. Things like aircraft, motor cars, electrical goods, frozen foods, plastics, nuclear weapons, computers and faxes just did not exist a century ago. Today, they are a basic feature of life in most societies.

In other words, the Industrial Revolution was not just one event that happened in U.K. about 200 years ago. It was really the speeding up of changes, and these changes have continued to produce new changes right up to the present time.



Construction of a warship made of plastic and fibreglass

6. **Urbanisation**

All industrial countries have a large proportion of their people living in towns and cities. The most highly urbanized countries in the world today: Australia, Belgium, U.K., Japan - all have a lot of industries.

As more and more secondary industries are set up in the **developing countries**, so their populations are becoming more and more urbanized. Huge cities such as Mexico City, Sao Paulo, Lagos, Cairo and Calcutta are now growing more quickly than the big cities of the older industrial countries.

7. Education

In modern industrial countries, the workers need to be able to read and write, and they must learn how to do the jobs in factories and service industries. People must also be trained in how to make use of their leisure time, as working hours become shorter and shorter. Therefore all industrial nations have systems of compulsory education at primary and secondary level.

In **developing countries**, compulsory education is less common, but rapid advances are being made.

Children at a primary school in Vanuatu

8. The "global village"

Before the Industrial Revolution, most people lived in villages, with very little contact with the outside world. Their basic needs were met from the local environment

Modern development in industry and transport has changed all this. Large factories may get their **raw materials** from a country on the other side of the world, and may send their products to places all around the world. For example, in your local store, you can buy a bar of chocolate made in Australia using cacao from Ghana, or a tin of fish made in Japan, or a Coleman Lamp made in Germany. Copra from your village goes to France to be made into a bar of soap that is later sold in Saudi-Arabia.

In other words, almost every part of the world is now linked by trade to somewhere else, and we are becoming increasingly **interdependent**. It is really as though all humankind is part of one village or country, called "the earth".

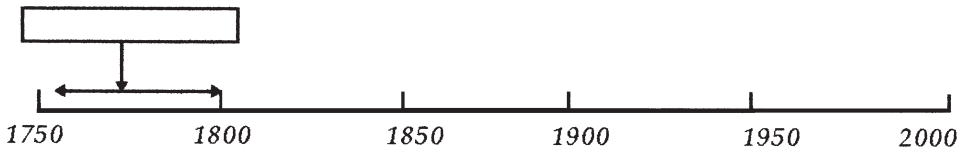
ACTIVITIES

1. *Make a list of 10 articles or products in everyday use in Vanuatu that have been manufactured by machines in an overseas factory.*

2. *Describe any **three** ways in which the manufacture of goods **after** the Industrial Revolution is different to the way in which they **were** made **before** the Industrial Revolution.*

3. a. *Copy the map below and colour it in. Add a key in which you name the industrial nations numbered 1 to 7.*

b. Copy and complete this time line to show the approximate dates when the nations you named in 3a) started to industrialize:



4. *Draw a picture to show what you think conditions were like inside the early European factories.*

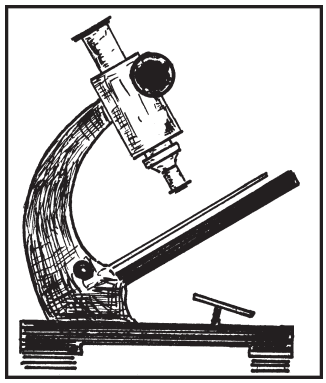
5. *Do you think that the Industrial Revolution has already started in Vanuatu? Give reasons for your answer.*

6. *What is your opinion of the changes brought by the Industrial Revolution? Are they good, bad, or both?*

7. *Why do you think that the nations that have developed the most industries are also the most powerful nations in the world?*

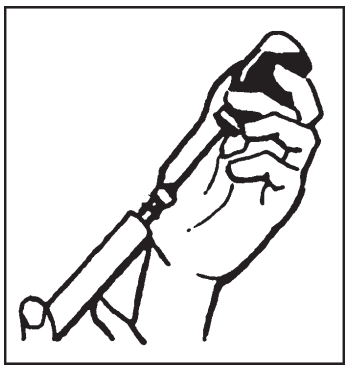
(Note: Questions 5, 6 and 7 can be done through group discussion).

The fight against disease



Until about 150 years ago, terrible diseases such as smallpox, cholera, bubonic plague and rabies were very common and caused a lot of deaths. Once a person caught such a disease he usually died, as there was no effective treatment.

During the Industrial Revolution in Europe, things began to change. Doctors and scientists conducted experiments and developed the techniques of **vaccination** and **immunization**. They found out how a lot of diseases were caused, and started to fight them using chemicals, and later, **antibiotics**. They also discovered anaesthetics and pain-killers. The main cause of the improvement in people's health, however, was the introduction of sewers, proper sanitation and supplies of pure, piped water.



The better sanitation and the medical discoveries have had enormous effects on society. Mortality has declined, and life expectancy is greater. Diseases such as smallpox and plague have completely disappeared.

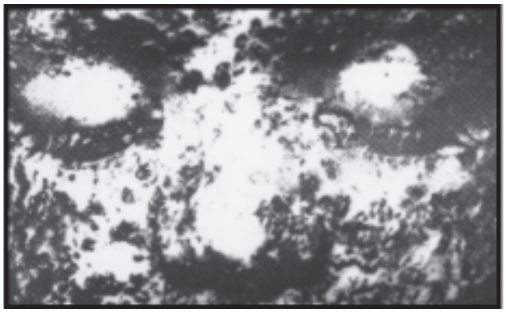
But the fight against disease is still not yet won. Cases of malaria and cancer, for example, are currently *increasing* in the world.

We will now look more closely at one of the earliest medical advances - vaccination and immunization.

Vaccination against smallpox

A person who catches smallpox develops a very high fever and an ugly rash all over his body. Photograph (A) below shows how his face will appear 10 days after the start of the rash; after 20 days (B) the rash has gone, but permanent scars are left.

A



B

In the olden days, most people who caught smallpox would die. It was a highly **contagious** disease that was greatly feared. A person who managed to live through it would have large scars that would stay for the rest of his life. Some people went blind or mad.

If you survived smallpox without too many marks you were very lucky, for it was unlikely that you would catch it a second time. Because of this, doctors in China and Turkey often used to give people smallpox deliberately. They hoped that the patient would get only a mild dose of the disease and that this would protect him for the rest of his life. This process was called **inoculation**. It spread to England in the early l700s. Sometimes inoculation worked well, but many people died from it.

Edward Jenner was a doctor living in a rural part of England. He found that many farmers around him caught a sickness called "cowpox" from their animals, and they believed that the cowpox prevented them from catching smallpox. Cowpox is a much milder disease than smallpox, and Jenner decided to look into this belief. He spent years studying the problem. By 1796 he was ready to try a daring experiment.

Sarah Nelmes, a dairymaid, came to him with cowpox sores. Jenner took some of the fluid from one of these sores and put it into two scratches in the arm of a healthy boy, James Phipps. The boy developed a sore on his arm but was better in a few days. Six weeks later, Jenner scratched Phipps' arm and put in some smallpox germs. Now he could only wait anxiously to see if the boy would get smallpox. Nothing happened! Jenner had shown that by giving someone cowpox you could make him **immune** to smallpox.

Two years later, Jenner published a pamphlet about his method, which he called **vaccination**. Some people thought that Jenner's ideas were dangerous, and stupid. The cartoon below appeared in a newspaper of the time: look at the people closely and find the cows coming out of them! But within a few years, doctors throughout the world were using his vaccination process. People had at last learnt how to control a terrible disease.0

The chemist who became a hero

Jenner found a way of preventing people from catching smallpox. But he never found out what caused the disease.

It was a Frenchman, Louis Pasteur, who a nearly a century later proved that diseases are caused by tiny organisms such as bacteria, viruses, fungi and worms. He used his microscope to find out that microorganisms are responsible for causing milk and meat to go bad and grape juice to turn into wine. He studied diseases among fowls and sheep and discovered that they too were caused by micro-organisms.

He found that if he injected chickens and sheep with a very weak form of a disease, they would become immune to that particular disease and not catch it again. In 1885, he tried out the same method on a boy who had been badly bitten by a dog with **rabies**. He injected the boy with a very weak form of rabies, and his method worked. The boy lived.

The news of Pasteur's triumph spread quickly, and more and more cases came to him. Within 15 years, rabies had been completely wiped out from many areas.

Pasteur had shown how diseases were caused, and also how they might be prevented. Within a short time, several other diseases had been conquered.

ACTIVITIES

1. a. *What is the meaning of **vaccination**, **inoculation** and **immunization**?*

   b. *Find out 5 other diseases (besides smallpox and rabies) against which a person can be vaccinated/immunized.*

   c. *Against which diseases have you been immunised or vaccinated, and when was this done?*

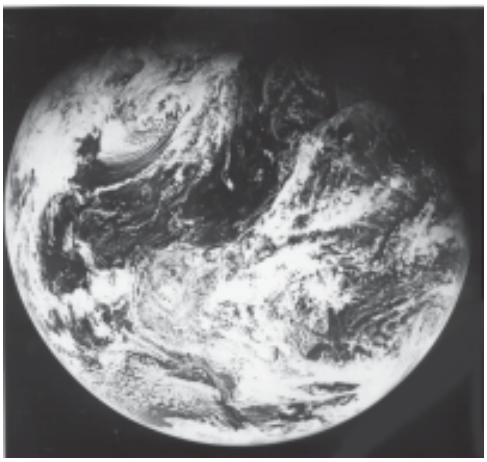
2. *Pasteur made most of his discoveries by experimenting on animals. Should a doctor use animals in this way?*

3. *Name 5 other recent medical discoveries, (apart from vaccination/ immunization) that have benefited mankind.*

4. *In general, what has been the effect on the world's population of the great medical and sanitation advances of the last 150 years?*

5. *Find out about how the Rural Health Service is fighting malaria in Vanuatu - the methods used, and the difficulties met.*

Transport and communications



A view of the earth from space, taken from “Apollo 8” on 21/12/1968

You have already read that it is *only within the last 150 years* that the great advances in manufacturing and disease control have taken place. It is the same with **communication** (the sending of messages) and **transport** (ways in which we travel from place to place).

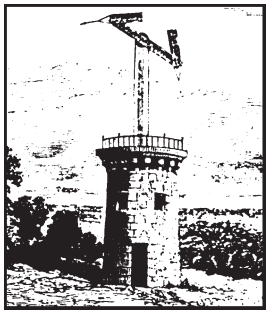
Around 1800, it took about 4 months to travel by sailing ship from Europe to the South Pacific. To send a message between these two areas would have taken the same amount of time. There was no telephone or radio.

Today, you can travel by air from Vila to London or Paris in approximately 22 hours. A letter takes a few days, a telex just 4 minutes, and fax or e-mail just a few seconds. If you wish, you can pick up a telephone and simply talk to your friend on the other side of the world.

In July 1996, it was possible to sit in front of a television screen in Port Vila or Luganville, and watch the Olympic Games as they actually took place in Atlanta, approximately 12,000 km away.

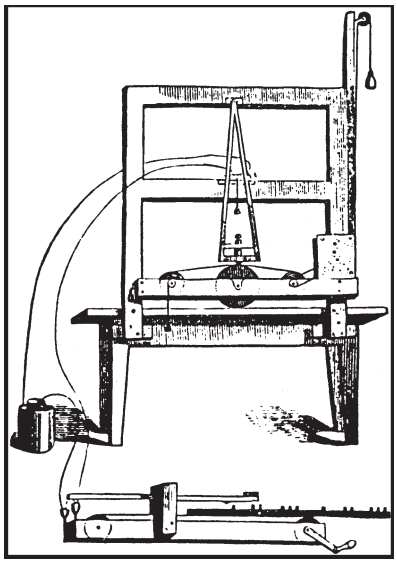
It is not possible in this booklet to look at all changes in transport and communication that have taken place. We shall simply look at those that are particularly important for Vanuatu: radio and tele-communications, shipping and aircraft.

Radio and telecommunications



For centuries, the only way in which one person could communicate with another in a different place was by sending a written message. Usually these messages were carried by hand, although carrier pigeons were sometimes used.

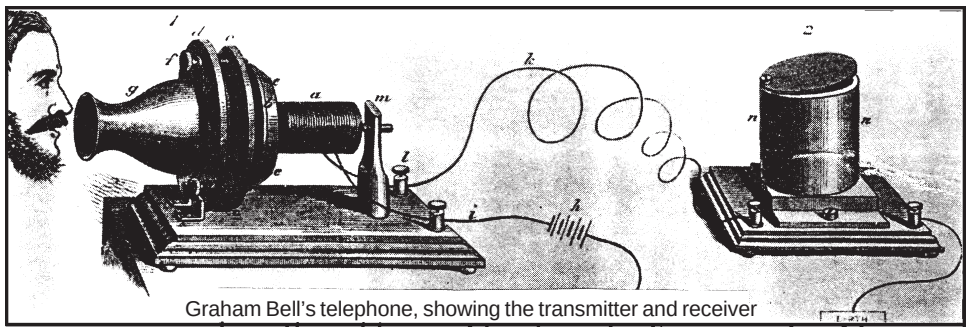
In the 1700s, a "visual telegraph" system was used in France. Stone towers were built on hill-tops, and on each tower were wooden arms. The different positions of the arms represented the letters of the alphabet. Messages were passed by signalling from one tower to another.



In 1844, an American named Samuel Morse first used a machine that could send electrical signals along a wire. The special "language" he used was called the **morse code**. Short taps on the wire were called "dots" and long taps were called "dashes". Each letter of the alphabet was represented by a different number of dots and dashes. Thus ··· - - - ··· meant "S.O.S." or "Help!". Morse's first message was sent between Washington and Baltimore. For the first time, news could now be sent very quickly over long distances.

The method of sending messages along wires or cables is more correctly known as the **telegraph**. For a while, the sea was an obstacle, but soon special submarine cables had been invented, and in 1866, the first cable across the Atlantic Ocean was put down.

In 1876, Alexander Graham Bell invented the **telephone**, an instrument that could send the sound of a human voice along an electric cable. This was much faster than the telegraph!



Graham Bell's telephone, showing the transmitter and receiver

Although the telephone was useful, there were still many places where the cables could not reach. For example, ships at sea were unable to communicate with the land. The invention of the **radio**, or **wireless** changed all this.

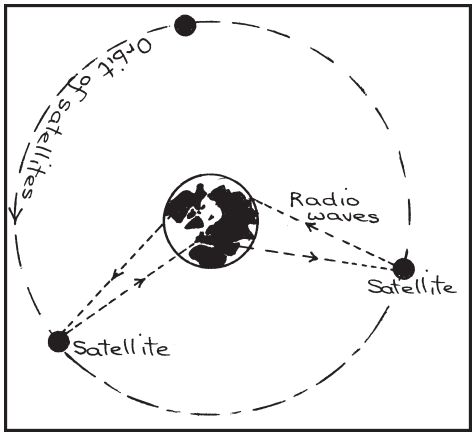
It was Guglielmo Marconi who developed the first radio. This instrument sends out electromagnetic waves that can travel for very long distances in the lower atmosphere, and can be picked up by a **receiver**. In 1901, Marconi sent the first radio message across the Atlantic Ocean, a distance of 4,000 km. Very soon, all the major industrial countries had their own radio stations, and radio was being used to send messages all around the world. "Radio Vanuatu" began broadcasting in 1961.

The communication of pictures by **television** began in 1928, and **radar** was discovered in 1932. Television pictures cannot be sent over long distances, and for a long time, it was only the industrial nations of the world that could set up their own TV stations. But in the last 10 years, television has come to most of the nations of the South Pacific. "Televisen blong Vanuatu" began operating in 1994, and can now be received in Port Vila, Luganville and parts of Malakula. Radar helps ships and aircraft to find their way in conditions of darkness or bad weather.

In the last 20 years, the use of **telex**, **satellite**, **UHF radio**, and, more recently, **fax** and **e-mail**, has become very important.

A **telex**, or teleprinter, is a machine that sends printed messages or pictures by telephone cable from one place to another. You can type on a machine in an office in Vila and within seconds, your message is being printed on a similar machine in an office in Australia or Hong Kong. A **fax** (**facsimile**) machine transmits any kind of document via telephone. **e-mail** messages are sent from one computer to another computer, by radio signal and cable.

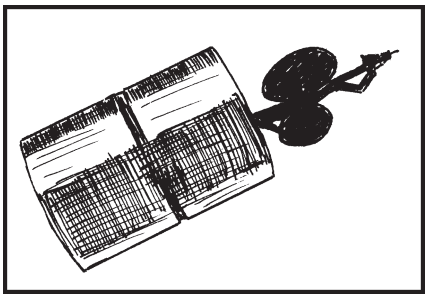
Satellites are instruments floating in space around the earth. They may orbit the earth daily, or they may be stationary. The first satellite was sent into space by Russia in 1957. Since then, both the U.S.A. and Russia have sent up hundreds more into space. Many of these satellites are for communications purposes: the satellite receives radio waves from a station in one part of the world, and sends them to a receiving station on the other side of the world.



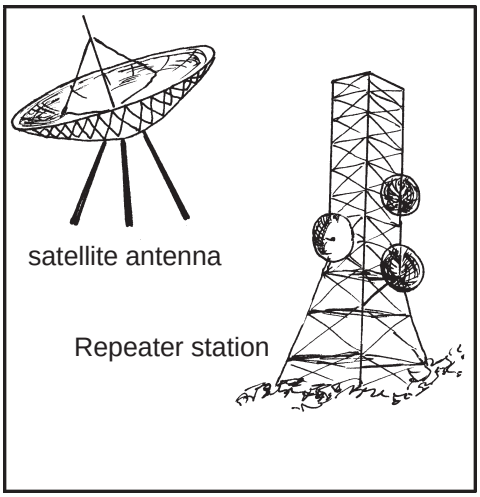
In this way, television pictures and long-distance telephone calls can be sent more quickly and with much better *quality* than ever before.

Today, more than two-thirds of all international telephone calls travel by means of satellites operated by the International Telecommunications Satellite Organization (**Intelsat**). Each of Intelsat's 15 satellites is about 4m wide and 12m long, and is situated at a height of 37,000 km above the Equator.

An "INTELSAT" satellite



To send out and receive messages to and from a satellite, a **satellite antenna**, or "**dish**" is needed. You can see many satellite dishes in Port Vila, most of which are used for receiving **satellite television** broadcasts that come from U.S.A., Australia and France.



UHF radio refers to radio waves of extremely high frequency. It is used to provide a **teleradio**, or radio-telephone, link in many countries. Radio signals are passed from place to place by means of **repeater stations**.

Nearly all the islands of Vanuatu are now joined together by teleradio links. Repeater stations on high ground pass on radio-telephone, telex and fax messages in a fraction of a second. Telephone calls between the islands are so much easier and clearer than they used to be.

ACTIVITIES

1. *Explain why each of the following people are important:*

   a. Samuel Morse b. Guglielmo Marconi c. Alexander Bell

2. *Draw a time line to show when each of the following were <u>first</u> used:*
   television satellite radio morse code telephone

3. *Suggest ways in which the following are important to the people of Vanuatu: a. the telephone b. "Radio Vanuatu"*

4. *Visit a repeater station and find out how it operates*

5. *Draw a picture of a satellite antenna and a repeater station. Explain what they are used for, and name **one** place in Vanuatu where you can find each of them.*

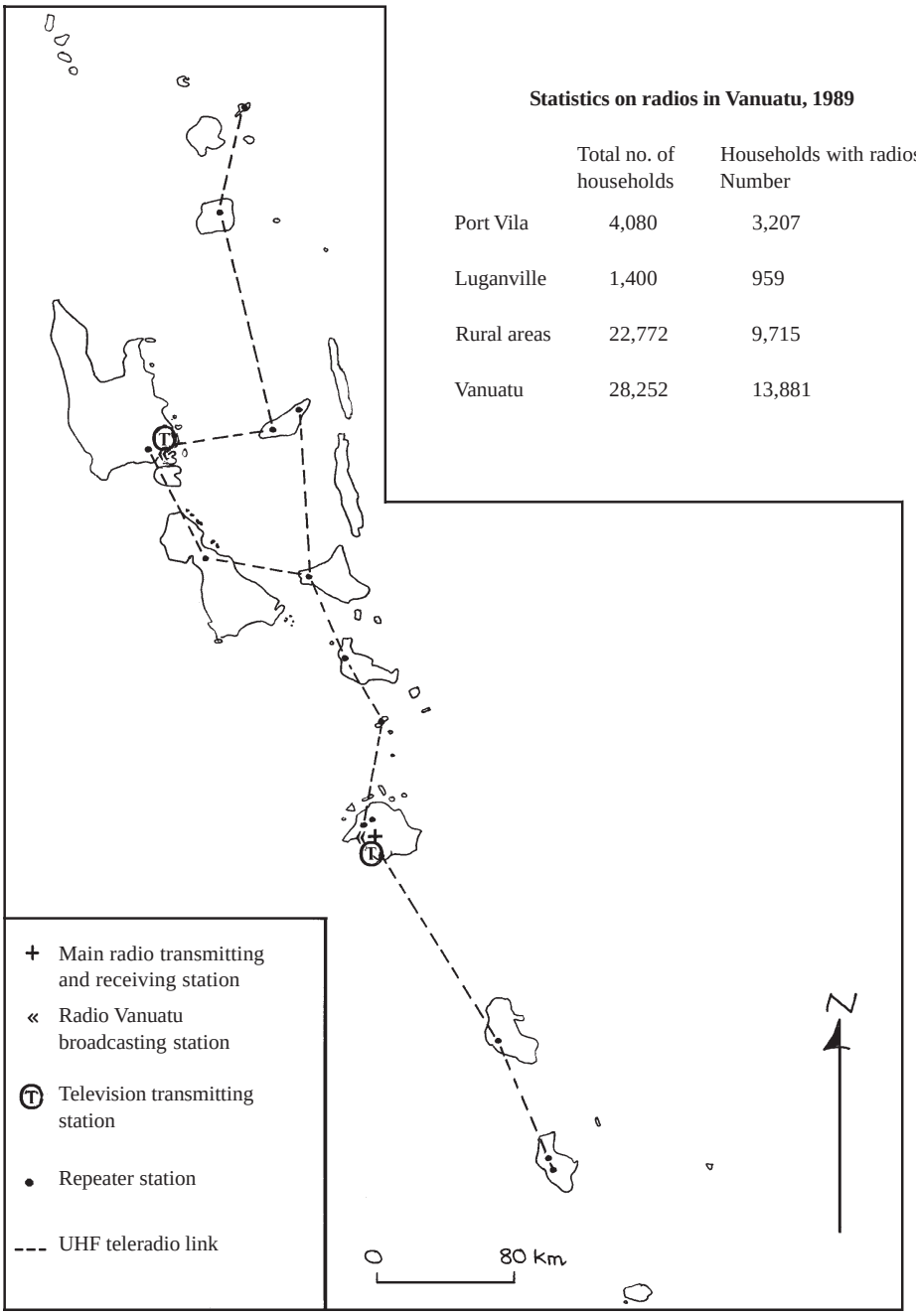
6. *"Television is very beneficial to Vanuatu". Discuss.*

7. *With reference to the map on the next page:*

   a. List all the islands which have repeater stations.

b. According to the table, in which parts of Vanuatu are people most likely to listen to the radio - urban or rural? Can you suggest why?

Radio, television and telecommunications in Vanuatu



Statistics on radios in Vanuatu, 1989

	Total no. of households	Households with radios Number	%
Port Vila	4,080	3,207	78.6
Luganville	1,400	959	68.5
Rural areas	22,772	9,715	42.7
Vanuatu	28,252	13,881	49.1

Developments in shipping

For centuries, people relied on the power of the wind to take them on voyages across oceans and seas. Sailing ships were the most important method of ocean transport right up until around 1850, when steam ships were first introduced. These were built of iron (later, of steel), and relied on coal for their fuel. They were quicker and more powerful than the sailing vessels.

Steam ships soon replaced the sailing ships. By the early part of the present century, shipbuilding yards in Britain, Germany and Japan were building steam-powered cargo vessels, warships and passenger liners, and a greater volume of goods and passengers was being carried than ever before.

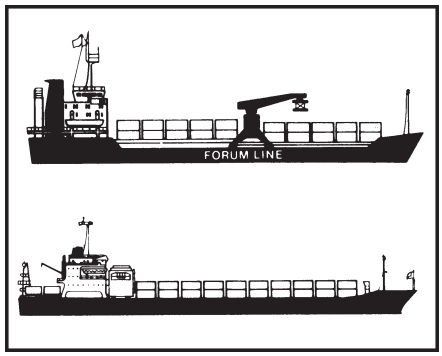
Since the Second World War, there have been three important changes in shipping:

a. Most ships now use diesel oil instead of coal. This is more **efficient**, and enables ships to travel for longer distances before having to re-fuel.

b. There has been a decrease in the number of passenger liners, which have suffered in competition with air transport. Some of the old liners have been turned into "cruise ships".

c. There are now very few "tramp" steamers, or ships that carry any type of cargo. Ships are specially built to carry a particular type of product. There are **bulk carriers** such as oil tankers, which are the largest ships afloat. And there are **container ships** for smaller goods.

Carrying cargoes in **containers** is very efficient. A container is a large metal box which can hold a lot of different small items of cargo. If these items have to be carried for long distances by both sea and land, the same container can be carried by ship, railway or road without opening it until it reaches its destination. Nearly all the cargo ships that visit Vanuatu today are **container ships**.



How many containers can be carried by each of the Pacific Forum Line ships shown in the pictures above?

For Vanuatu, both ocean-going and inter-island shipping are important. Ocean-going vessels handle the imports and exports, and bring in large numbers of tourists. Inter-island vessels carry copra to Vila and Santo and distribute essential goods to the outer islands. They also provide an important passenger service.

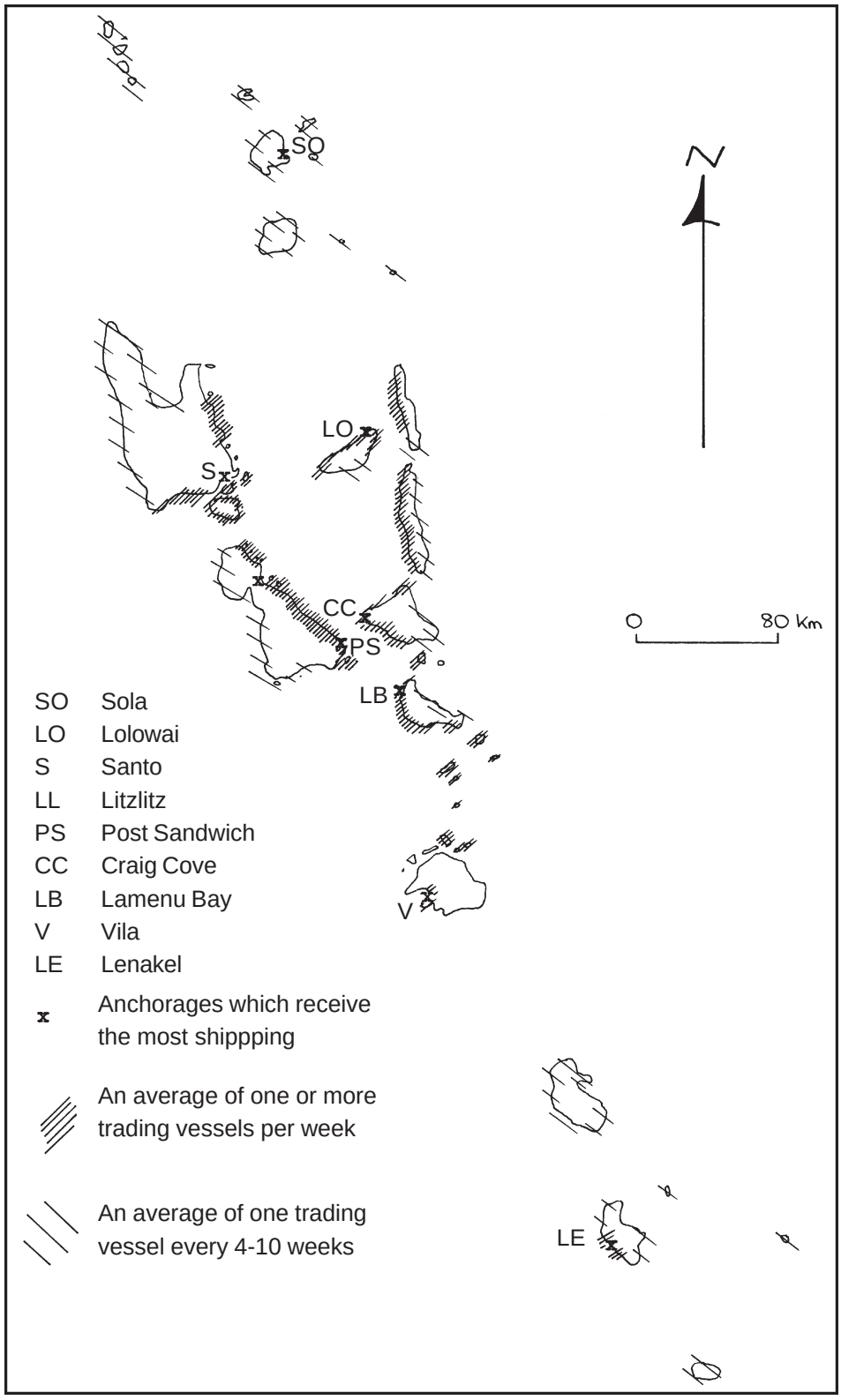
Since Independence, there have been several changes to inter-island shipping in Vanuatu. Perhaps the biggest change is that after 1981, all vessels operating in Vanuatu waters have had to be owned by ni-Vanuatu, or by companies in which ni-Vanuatu are the majority. Safety regulations have been introduced, and an attempt has been made to get ships to operate on regular routes. In January 1997,

there were 85 commercial vessels in Vanuatu (cargo-passenger ships, and yachts for tourism purposes), together with a fleet of 6 government-owned ships (including the *R.M.V. Tukoro*) for administrative purposes.

ACTIVITIES

1. *Explain why:*
   a. *Sailing ships quickly declined in importance as soon as the first steam ships were built.*
   b. *Container shipping is a very good way of carrying small items of cargo.*
   c. *There are very few passenger liners in the world today.*
   d. *Large oil tankers do not visit Vanuatu.*
2. *What changes in inter-island shipping have taken place on your island during your life-time? For example, have services become more frequent or less frequent?*
3. *In what ways do ni-Vanuatu depend on inter-island shipping? Give some actual examples.*
4. *Are you satisfied with the inter-island shipping services in Vanuatu at present? Suggest ways in which they could be improved.*
5. *With reference to the map on page 25:*
   a. *List the anchorages that receive the most shipping*
   b. *List the areas that receive one or more trading vessels per week (e.g. "South coast of Santo, Central-East coast of Santo .....")*
6. *Draw a picture of any ship you have seen in Vanuatu waters. Say what type of vessel it is, and state its normal route.*

Sea communications in Vanuatu



Air transport

Air transport did not exist before the present century. The first power-controlled flight was made in 1903 in the U.S.A. by the Wright brothers. The first crossing of the Atlantic took place in 1919 by Alcock and Brown. Aircraft played an important part in both the First and the Second World Wars. But it is only since the Second World War that aircraft have been used to carry large numbers of passengers, and more recently, of freight.

The greatest use of aircraft has been in the industrialized countries, where there is a high standard of living and people can afford the cost of air travel. Can you name some of these countries?

The use of aircraft means that airports have to be built. A large international airport needs about 40 km^2 of space, with runways 4 km long. The largest aircraft in operation today are the Jumbo jets, which can carry up to 400 passengers at a time!

All aircraft today use kerosene as their fuel. Since kerosene is obtained from petroleum, the widespread use of aircraft is one of the main reasons for the present rapid consumption of the world's petroleum resources. Motor vehicles which use petrol are evn more important.

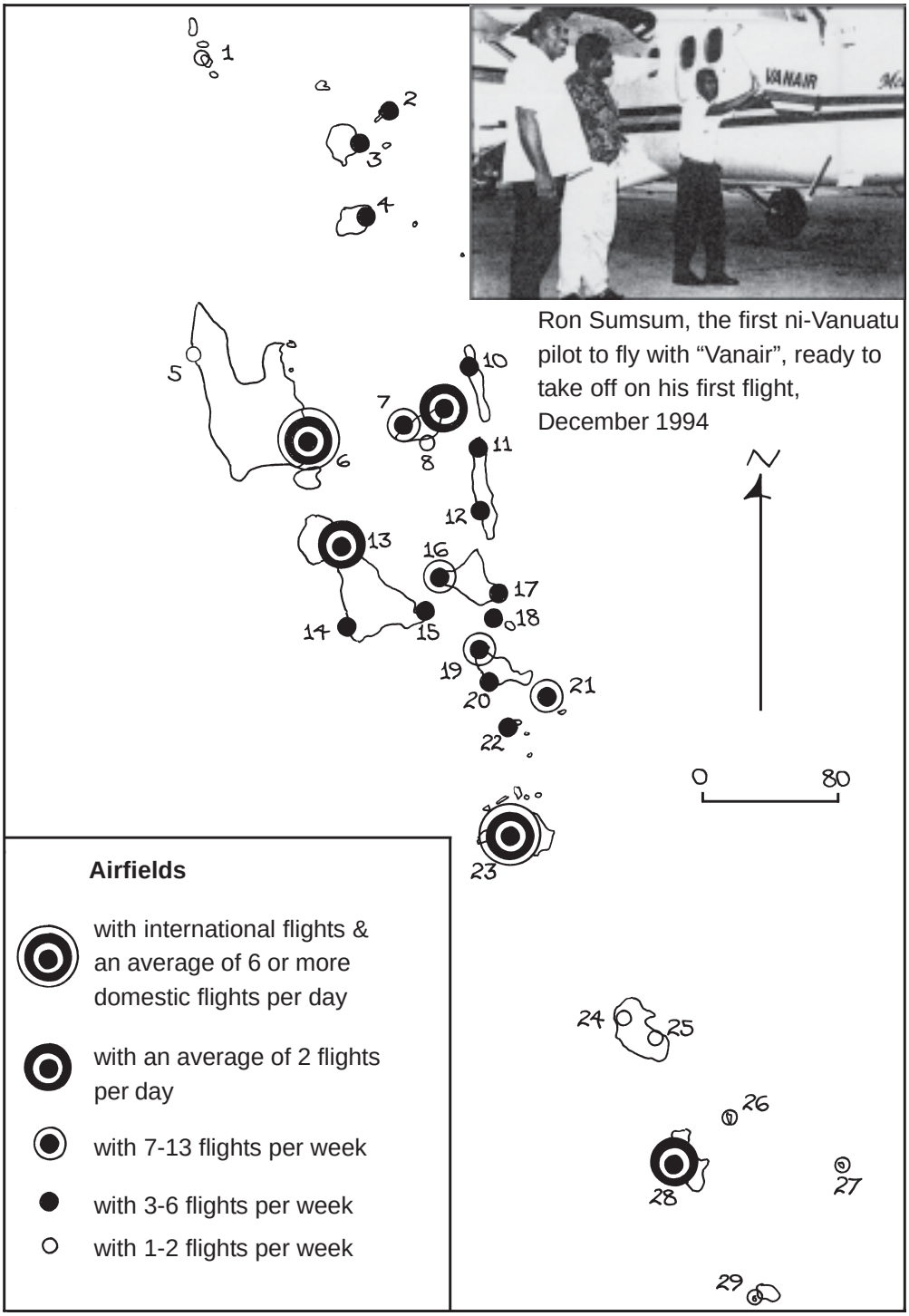
In Vanuatu, the first aircraft were military planes that flew between Bauerfield and the 5 airstrips at Santo during the Second World War. The first commercial flights were seaplanes operated by Quantas between Santo, Vila and Sydney during the early 1950s.

Domestic, or internal, flights in Vanuatu were started by "New Hebrides Airways" in 1959. This company was founded by Bob Paul, a planter on Tanna, and the pilot of the one small "Rapide" aircraft was Paul Burton. The company was allowed to fly between Vila and Lenakel, but no fares could be charged: instead, passengers purchased a box of matches from Bob Paul's store on Tanna at £5 per box! Later, airstrips were cleared on Futuna, Tongoa, Ambae (Walaha and Longana) and on Pentecost (Lonorore), and by the early 1960s, Paul Burton was flying to all of these, together with Santo. In 1970, "New Hebrides Airways" became "Air Melanesiae". In 1989, "Air Melanesiae" became "Vanair", and in 1996, "Vanair" became a part of "Air Vanuatu", the **overseas carrier**. In January 1997, "Vanair" had a fleet of 6 aircraft serving 29 airstrips on 20 islands; it employed 148 staff, including 10 pilots (of whom three are ni-Vanuatu).

"Air Vanuatu" began operating in 1987, using a Boeing 737 aircraft leased from Qantas. In 1998, it had regular flights from Port Vila to Sydney, Melbourne, Brisbane, Auckland, Honiara, Nadi and Nouméa.

Air communications in Vanuatu, January 1997

Ron Sumsum, the first ni-Vanuatu pilot to fly with “Vanair”, ready to take off on his first flight, December 1994



Some effects of the changes in transport and communications on modern society

- With modern aircraft, radio and telecommunications, very few places are now truly isolated. People quickly know what is happening in other parts of the world, and hear of new ideas.
- More and more people can move quickly from place to place, either as migrants or as visitors. Different cultures and races of people are coming into contact with each other as never before in the history of the world.
- Overcrowded air routes and congested roads can be dangerous, and may lead to loss of life.
- Because petroleum is the basic fuel for most forms of transport, enormous wealth is being earnt by those countries which have it, especially nations in the Middle East.
- increasing pollution of sea, land and air by planes, oil tankers and motor vehicles.

ACTIVITIES

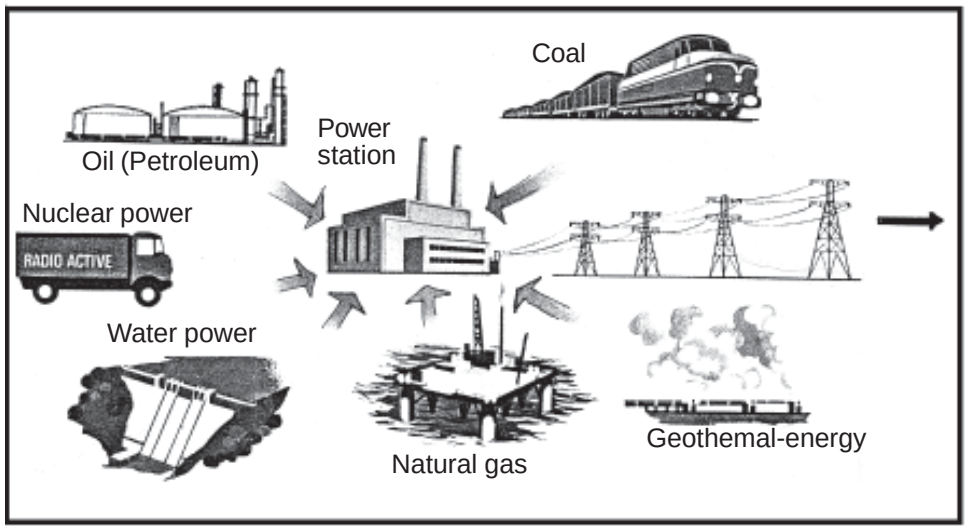
1. *Draw two maps to show how inter-island air transport has changed in Vanuatu since 1959. The **first** map will be for 1997. Draw all the air routes using coloured lines. Make sure that each airfield is connected to one or more others. Add a key in which you name all the airfields numbered 1 to 30 in the map on page 26. The **second** map will be for 1959. In the same way, show all the existing air routes at this time. Label your two maps carefully.*
2. *Study the maps on pages 21, 24 and 26, and draw another map of Vanuatu to show all areas which have poor or infrequent communications with the rest of the country. Shade and name these areas carefully and give your map a title.*
3. *Explain the advantages and disadvantages of inter-island air transport in Vanuatu.*
4. *"Different cultures and races of people are coming into contact with each other as never before in the history of the world."*
   a. *What does this mean?*
   b. *Why it is happening?*
   c. *Give an actual example*
   d. *What problems may occur as a result of this contact, and how can they be solved?*
5. *Group work: Make a summary of the advantages and disadvantages of the modern methods of transport and communication.*

Use of electricity

Electricity is a silent, invisible method of transferring energy from one place to another. During the 18th century, scientists found ways of extracting this energy and making it flow in the form of an "electric current". They also found ways of making a supply of electrical energy using large magnets, or dynamos.

Today, electrical energy is one of the most useful forms of power. It is clean, convenient and easily sent by cable from place to place. It springs to life at the flick of a switch. It can be stored in **batteries**, which can be carried around and enable the use of electrical equipment almost anywhere.

Because electrical energy is so useful, most countries today try to **convert** other sources of power into it in power stations or generators. Most electrical energy is obtained from petroleum, but natural gas, coal, water, nuclear energy, geothermal energy, biomass and solar power are also being used.

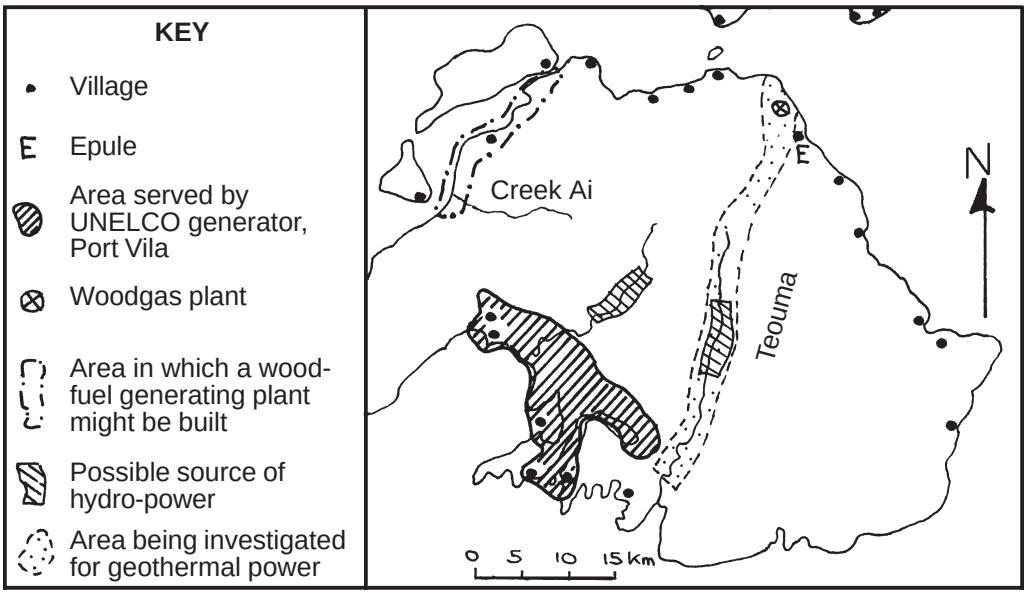


Sources of energy

In Vanuatu, most electrical energy is generated using diesel fuel (which comes from petroleum). Electrical energy is the main source of power in four main areas: Port Vila and its surrounding villages, Luganville, Lakatoro and Isangel. In Port Vila and Luganville, electricity is provided by a company called **Unelco**. In Lakatoro and Isangel, the P.W.D. runs the generators.

In recent years, however, some new sources of electrical energy have been brought into use in Vanuatu. A **hydro-power** scheme has operated on the Sarakata River, Santo, since 1995. The Energy Unit in the Department of Lands and Natural Resources is looking at the establishment of **micro-hydro projects** in a number of rural areas - such as at Epule in N.E. Efate. **Solar cells** are already in use in several homes in the towns; they provide the power source for all **UHF** repeater stations, for a number of tourist resorts (for example, Whitegrass Bungalows on Tanna), and in other places such as Uripiv Island. **Woodgas plants** generate electricity at **Kitow** on Tanna and at Onesua High School, North Efate. Research is being done into the possible use of **geothermal energy** on Efate.

Electricity on Efate



The majority of people in Vanuatu, however, do not have access to electricity. Although individual households, schools, hospitals and Provincial Government headquarters may have their own private generators or solar cells, most of the population must still rely on firewood for cooking and kerosene lamps for lighting.

ACTIVITIES

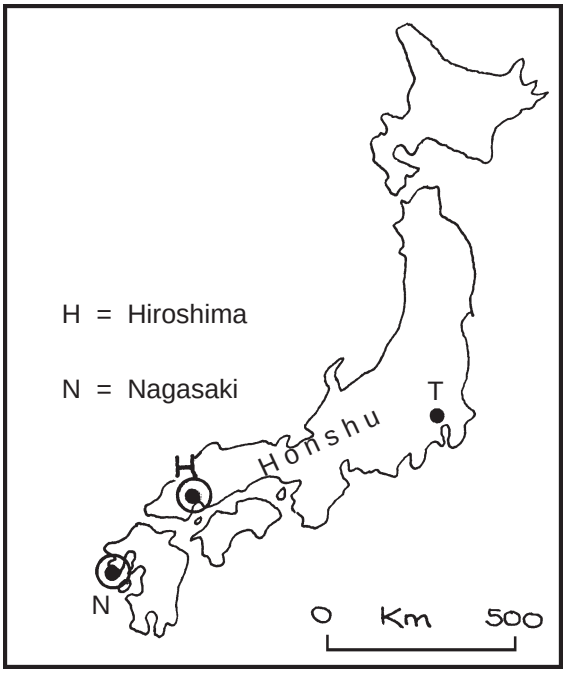
1. *a. Where does your school's electricity supply come from?*
   b. What problems occur in your school when the electricity fails?
   c. List 5 ways in which electricity is used in your daily life.
2. *List 5 everyday objects which work by means of electricity stored in batteries.*
3. ***Ca**n you see any **disadvantages** in the introduction of electricity into a village? (You may be able to visit a village where electricity has recently been introduced, and interview some of the people.)*
4. *Copy the diagram on page 27. Then complete it by drawing pictures of some of the different things that work by electrical energy.*
5. *Why do you think both Unelco and the Vanuatu Government are trying to find new ways of making electricity? Which new method(s) might be best for Vanuatu?*

Nuclear weapons

Just before the Second World War, scientists in the U.S.A. conducted an experiment that has changed the course of history.

They found out how to split an atom of the metal uranium. This process of splitting (called **nuclear fission**) releases enormous amounts of energy, more than 100 million times greater per atom than the energy produced by burning petroleum.

If controlled, this process could generate energy for use in power stations. But if not controlled, it would result in a tremendous explosion. It was this second use that was quickly put into practice.



Explosion of the first nuclear bombs

When the U.S.A. entered the Second World War, some of her scientists continued their experiments on "atomic bombs", which used nuclear fission to produce an explosion greater than anything that had ever been known before.

On August 6th 1945, the first nuclear weapon was dropped on the city of Hiroshima in Japan (H in the map). A few days later, a second bomb was dropped on Nagasaki (N).

Here is a description of the effects of the nuclear weapon dropped on Hiroshima from the bomber "Enola Gay":

Survivors have different stories to tell of what they experienced in that awful moment. At first there seemed to be no sound, just blinding light. Enola Gay's tail gunner saw the world go purple as a ball of fire with a temperature of 100 million degrees at its centre spread across the landscape. Some Japanese spoke of a blackness, some of a rainbow coloured object, others of a blue and gold blossom shape. To many, it was like an enormous photographic flashbulb exploding. Its

effect was to turn the centre of Hiroshima into an oven in which thousands were burned to nothing. Only permanent shadows like blurred photographs indicated where human beings had once been. Further away, people died more slowly and horribly from radiation and fire. Even people living miles from the city found that it burned everything black that faced it. People's faces, their bodies, even the print in books was affected.

The first fearful heat was followed by a 500 m.p.h. wind. It uprooted trees, flattened buildings and caused a rain of flying glass which tore people to shreds. Clothes were ripped off, pillars under the explosion driven straight into the ground, blades of grass turned into dangerous objects which pierced people's bodies. In the harbour this hurricane produced tidal waves which drowned many who had hurled themselves into the water to escape.

Simultaneously, the thousands of charcoal stoves being used to make breakfast started scores of fires to add to the gigantic blaze ignited by the bomb. Flimsy wood and paper houses burned fiercely, while larger buildings collapsed in flames. Half-mad people ran wildly through the streets, their faces black, their skin trailing in strips, their eyes hanging out. One man remembered years later: "I climbed on top of a pile of corpses. Layer upon layer of them. Some were still moving, still alive! I had to get over them. I can still hear the cracking of their bones." For hours afterwards, people continued to die. Five square miles of Hiroshima were turned into what an American observer described as a "huge, dirty, grey and rusty brown stain". High up and far away, another U.S. airman gazed at the mushroom cloud nearly four miles high and exclaimed, "My God, what have we done?"

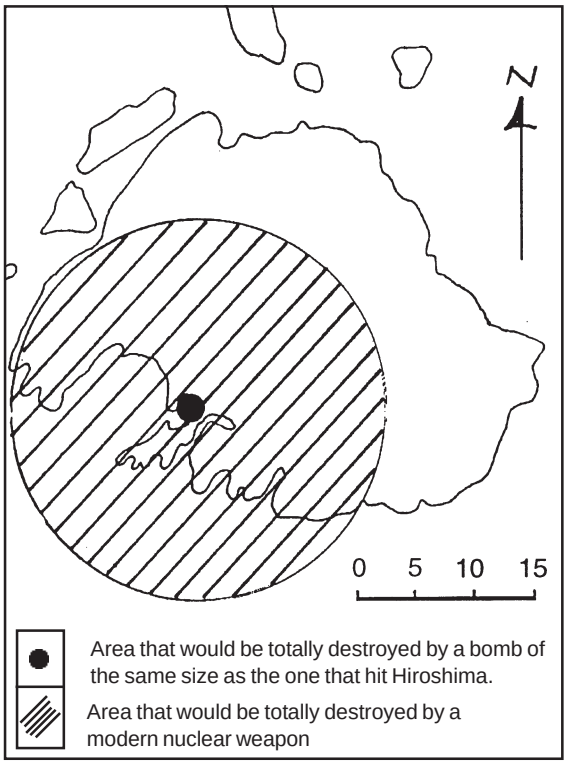
Ordinary air raids had already killed more than the 80,000 who died at Hiroshima. But this time it was different. For weeks afterwards, victims began to suffer from a mysterious illness. Their skin became disfigured with tiny bleedings. Their hair fell out. Then they died. Ever since, this radiation disease, called by the Japanese "the sickness of the original child bomb" has continued to kill. Today, people who were not even born in August 1945 die and suffer from the poison let loose that day, or in later atomic tests. Radioactive materials fall to earth, where they are absorbed into the soil and so into plants. The animals who feed on them transmit the poison through their meat and milk. Once a human being has eaten enough, he contracts cancer. So the bombs dropped on Hiroshima on Nagasaki continue to punish the innocent.

In a terrible century, mankind has produced the final horror.

After these first terrible explosions, the manufacture of nuclear weapons did not stop. Both U.S.A. and U.S.S.R. (Russia) were soon making them by the thousand, for use in a future war.

With continued scientific research and testing, nuclear weapons became more and more powerful. By the middle of the 1980s, it was thought that each of the I.C.B.M.s (Intercontinental Ballistic Missiles) being made by the U.S.A. had an explosive power *one thousand times greater* than that of the first Hiroshima bomb.

The map on the right shows what might have happened if the first atomic bomb had been dropped on the Post Office in Port Vila. It also shows the area that would be totally destroyed if just one of the present-day nuclear weapons was used. Within the area shaded /////, every single living thing would die and every building would collapse.



It is believed that there are now at least 50,000 to 60,000 nuclear weapons in the world, mostly in the hands of the U.S.A. and Russia. Since 1990, the two nations have agreed to **disarm**, and slowly reduce the numbers of their nuclear missiles and bombs. However, other countries such as Ukraine, China, India, U.K., France, Pakistan and probably Israel, are also holding stocks of these weapons.

The danger is that the countries that have nuclear weapons will get involved in a war and start using them. If any one nation starts using nuclear weapons, enormous damage would be done, and hundreds of millions of people would die, not just where the bombs dropped, but all over the world.

In other words, the development of nuclear energy has brought mankind to a key turning point. We now have the ability to destroy ourselves and our environment and to change the planet as never before.

What can be done? Some people believe that nuclear weapons help to keep peace and safety, and that if a nation has them, other nations will be frightened to start a war with it. Other people say that all nations should **disarm**, or cut down the number of weapons that they have, particularly nuclear weapons. They say that nuclear weapons should be abolished or "banned", because this will reduce the dangers of a "nuclear war". The United Nations is trying to get all its members to agree to disarm.

Others say that the peoples and nations of the world must first find a way to accept each other and to live together in **unity**. Then they will have no need of weapons!

ACTIVITIES

1. *What changes has nuclear fission brought to the world? (Think about both nuclear power and nuclear bombs)*
2. a. *Why are the U.S.A. and Russia the most powerful nations in the world?*
   b. *Why do you think that the "nuclear powers" (U.S.A., Russia, U.K., France, etc,) find it so difficult to* ***disarm****?*
3. *On an outline map of the world, shade and name all countries which have nuclear weapons.*
4. *More and more smaller nations are trying to make their own nuclear weapons. Why is this so dangerous? What has been done to try and stop it?*
5. *Find out more about the following:*
   disarmament ***nuclear submarines***
   The balance of power ***The nuclear "ditterent"***
6. *Why do some people want to "Ban the Bomb"? In the picture on page 34, what are the students doing? What do you think of their actions?*
7. *Members of the United Nations signed a "Nuclear Test Ban" Treaty on 10th September 1996. Why was this a historic event?*
8. *How do you see the future of the world?*

The Green Revolution

In ***"Population Education"*** (10.1.1), you read that there have been rapid increases in population in the **developing countries** of the world since the Second World War. The population growth has been so great that food supplies have not been enough to feed everyone, particularly in Africa, South America and South Asia.

In an attempt to help farmers to produce more food from their tiny pieces of land, scientists in the 1960s began to breed new types of plant seed. The new varieties of wheat, rice and maize that they produced provide many times more grain than the old varieties. We say that the **yield** of the new types is much greater.

An example of the "Green Revolution": This Indian farmer in the Andes of South America is pleased with the results of using new high-yielding wheat seed and fertilizer. By increasing his yield, he now has enough to feed his family - and some left over which he can sell.

To enable these new varieties of wheat, rice and maize to grow, however, a lot more water and plant nutrients are needed. So scientists have experimented with new methods of **irrigation**, and developed better kinds of **fertilizer**.

These changes in agriculture are called the **Green Revolution**. With their help, farmers in countries like India, Philippines, Japan, Mexico, Peru, Egypt, Kenya and Tanzania have greatly increased their food supplies. In some cases, a subsistence farmer may have enough surplus grain to sell and earn himself some cash.

A new type of inflatable rubber dam used to help irrigation in very dry areas

ACTIVITIES

1. *What is the "Green Revolution"? Why did it first take place in India and South East Asia?*
2. *Compare the life-style of the farmer in the picture on page 35 with that of his father a generation ago.*
3. *Give two examples of crop-breeding in Vanuatu.*
4. *Why do you think that the techniques of the Green Revolution are going to become more and more important in Vanuatu?*

Computers and robots

You have already seen that the Industrial Revolution was not just one change, but a speeding up of change. Two very recent inventions - the computer and the robot - are already having far-reaching effects on both industry and on our whole way of living. The changes brought about by computers are already being referred to as the **information revolution**.

Computers

A **computer** is an electrically-powered machine which processes information. It sorts out and stores all kinds of information, and can make mathematical calculations within a fraction of a second.

A computer cannot operate unless a person first prepares a **programme** or list of instructions for it to follow in carrying out its task. Computer programmes are written in a special language, and it requires a lot of skilled and careful thinking to write one. These days, there are **software** programmes that enable the user to

write letters, sort data, make maps, do mathematical calculations, set up a school timetable, play games, predict what will happen in the future, watch movie films, and communicate with other users all around the world through the **Internet**.

The first computer was built at the University of Pennsylvania, U.S.A., in 1946. It was very large and weighed 30 tonnes. Today, the same work can be done a small computer that sits on a person's lap, at 1/10,000 part of the cost!

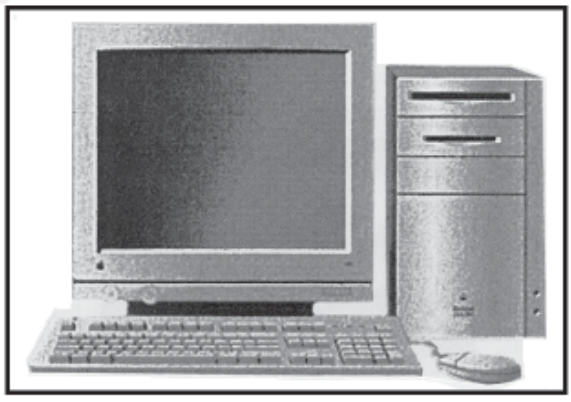
It was the introduction of the smaller, cheaper, "personal" computers in the 1980s that really changed things. Offices, businesses, and factories could now handle many different kinds of information much more quickly than ever before - words and drawings as well as figures. In the home, computers could be used for typing letters, making the household budget, and for keeping the children happy with "computer games".

Now, computers are used to mark multiple-choice examination papers, to calculate workers' salaries, to process colour films, and to conduct scientific experiments; the use of **word processing** programmes means that many people can write their letters by computer, instead of by typewriter; they can also send their letters by E-mail to the other side of the world in a few seconds.

In Vanuatu, the first computer was introduced in 1979 in the Bureau of Statistics. Today, all large offices, banks and companies in the towns have their own computers, as well as most secondary schools and many individual homes.

These days, most computers use **microprocessors** as their central processing units. A microprocessor is a complicated electrical circuit fixed on to a tiny square of silicon called a **microchip**, or **chip**, only a few mm in size. "Chips" can store information in a memory, and make millions of calculations per second! Chips are put in cash registers, calculators, cameras, electric keyboards and digital watches to enable them to carry out a variety of different tasks.

A home computer



The advances made in the world of computing are very rapid, and it is impossible to keep up-to-date with the changes. Already, you can buy a computer that is operated by a person's voice, rather than by a keyboard! An important new development to reach Vanuatu in 1996 was access to the **Internet**. This enables computers all around the world to be joined together in a network. Once your computer is connected, you can read what is on someone

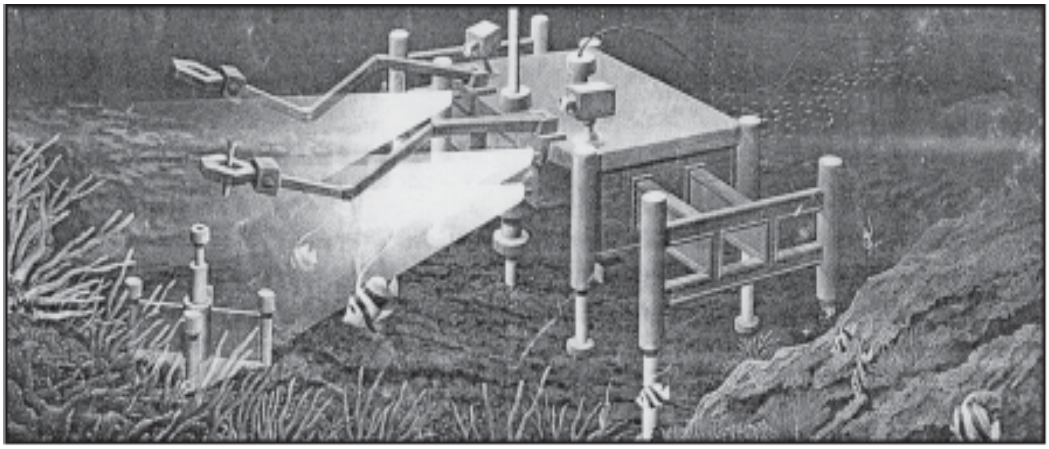
else's computer in another country, and make a copy. All kinds of information can be exchanged between people, regardless of national boundaries.

Robots

A **robot** is a machine built to do the work of humans. Robots are controlled by microprocessors, and work automatically. They are very useful for carrying out the same task over and over again, and so are highly suitable for work in factories.

Robots work faster than humans. They can work 24 hours a day, never get bored or sick, and never go on strike. They don't get tired, and don't make mistakes. If in a factory, a man is moved from one kind of job and put on to another, it might take weeks or months to retrain him. A robot can be re-programmed in a matter of minutes.

At present, robots are very expensive, and there are not many of them. Of the world total of 25,000 or so, Japan has about half.



This Japanese robot is working under water to build the foundations of a bridge

ACTIVITIES

1. *Find a person who wears a digital watch. Draw a picture of it and say what kind of functions it has.*
2. *Computers are becoming more and more important in education. The French government recently said that computer language would become the country's second language for every child, after French.*

   Do you think that this will happen in Vanuatu? Give your reasons.
3. *What are the advantages and disadvantages of the "Internet"?*
4. *Why are some factory and office workers not happy about the introduction of computers and robots?*
5. *How could you use a robot in your home?*

CHAPTER 3

CHANGE BROUGHT ABOUT BY THE DELIBERATE ACTION OF INDIVIDUALS, GROUPS AND ORGANIZATIONS

Throughout history, there have been strong individuals who have worked to change the society in which they lived. Most noteworthy are the Founders of the great world religions - Christ, Buddha, Muhammad and Baha'u'llah, for example. Some men and women, like Florence Nightingale, Albert Schweitzer and Mother Teresa have tried to help the sick and the suffering. Others, feeling that they were being unjustly treated, have struggled to obtain freedom and basic rights for their people: they may use peaceful, non-violent methods - in the case of Martin Luther King, Mahatma Gandhi and Nelson Mandela, for example; or they may fight for their freedom and beliefs using weapons and **guerilla warfare** - as with Mao Tse Tung, Fidel Castro and Che Guevara. A few men, like Adolf Hitler, have tried to get one particular race of people to rule over others.

Similarly, and particularly in the present century, there have been groups and organizations working for social, economic and political change. Trades Unions try to improve people's conditions of employment. The United Nations aims to make the world a better and safer place in which to live. Organizations like ESCAP, the South Pacific Commission, and the South Pacific Forum work to raise standards of health and education, and to encourage regional cooperation in trade, transport and economic development. The Red Cross helps people suffering after natural disasters. The Communist Parties in Russia and China tried to bring about a more equal distribution of wealth and land. Political groups in Africa and the Pacific have worked to obtain independence for their nations from the "colonial" powers.

When a person or organization deliberately sets out to change the way that people live, there is often **conflict**. Others may not like the change and may try to stop it. There may be demonstrations, strikes, fighting and bloodshed. People may be put in prison.

There is not enough space in this booklet to deal fully with all deliberate social, political and economic changes. Instead, we shall look only at one or two examples. The story of Martin Luther King will illustrate political and social change brought about by an individual using non-violent methods. A study of trade unions in Vanuatu will show how a group can improve workers' conditions and the methods that can be used. Lastly, a brief account of the South Pacific Commission, now re-named the Pacific Community, will illustrate an organization

working to improve the living conditions of Pacific islanders.

In all of these studies, try to look for the methods that the individual or organization has used to obtain change. Try to see whether any conflicts have occurred during the change, and *why* they have taken place. Then try to apply your study techniques to the stories of *other* individuals and organizations.

Martin Luther King

Dr Martin Luther King, Jnr., was born in 1929 in Atlanta, Georgia, U.S.A. His father was a Baptist preacher and his mother a school-teacher. He studied at Morehouse College, Atlanta, then at Boston College and Harvard University. He was ordained as a minister of the Baptist Church in 1947.

Like many people living in the U.S.A., Martin Luther King was a negro, or Black American (nowadays known as "Afro-American"). Black Americans were first brought across from Africa to the U.S.A. as **slaves**, during the 17th century. They came to work in the cotton plantations of the southern states.

Although the U.S. Congress (parliament) passed a law to end slavery in 1865, Afro-Americans continued for a long time to be regarded as second-class citizens.

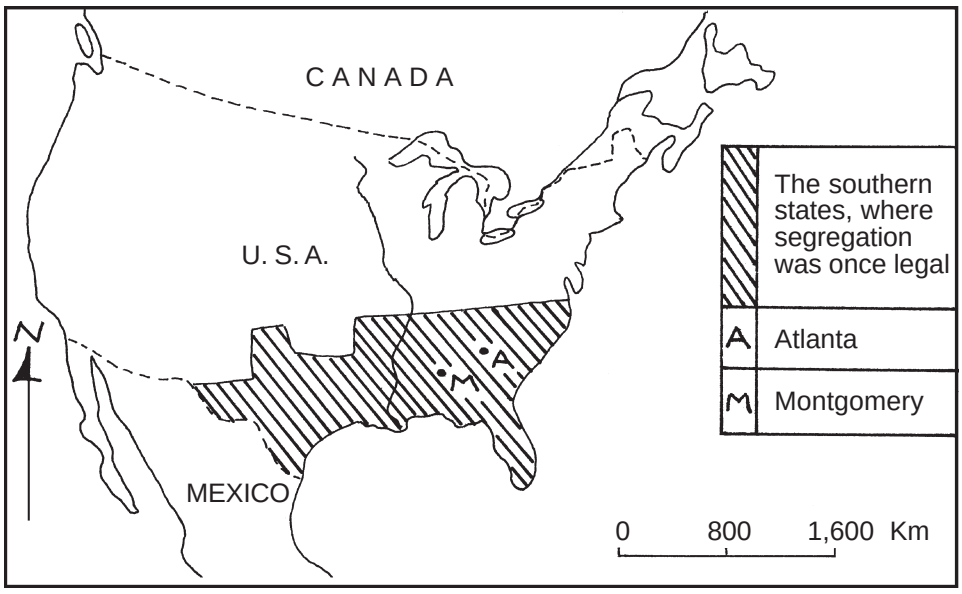
According to the constitution of the U.S.A., each *state* could make its own laws on matters such as voting. In the southern states, Afro-Americans were not given the right to vote. Black and white people were kept separate or **segregated**; they had to use separate schools, churches, hospitals, restaurants and even drinking fountains.

The problem was really one of **racial prejudice**. If you believe something about someone, or you judge him, before he has a chance to act, then you are showing prejudice. White people in the southern states believed that they were better than the black people, and they thought that black people could not do the kinds of work that they could do!

For nearly one hundred years *after* the anti-slave law was passed, Afro-Americans in the United States were not able to enjoy their **civil rights**. Civil rights are the rights of all citizens to receive fair and equal treatment under the laws of the country. Since Afro-Americans could not use their right to vote, particularly in the southern states, they could not elect representatives who would work to protect their rights. In the end, they were forced to **protest**, or take actions that would make Congress pass laws to give them their full civil rights.

Martin Luther King was one of the early leaders of the "Civil Rights Movement". He asked people to protest by using peaceful methods such as **boycotts** and **sit-ins**. On no account were they to fight or use violence.

One of the earliest protests took place in Montgomery, Alabama, in December 1955. A brave black woman named Rosa Parks sat in a seat reserved for white people in the middle of a bus. She refused to go and stand in the back of the bus, as black people were required to do by the law. She was arrested and put in prison. The black leaders in the city met and decided to call a **boycott** of the buses; in other words, they asked black people to refuse to ride in the buses. Martin Luther King was chosen to lead the Montgomery bus boycott.



Map of the southern states of the U.S.A.

For almost one year, black citizens of Montgomery refused to ride in the segregated buses. Instead, they walked to work. The bus company lost money and had to cut down the number of buses operating in the city. Dr King and nearly 100 other black leaders were arrested and some of their homes were bombed. But still the people refused to ride in the buses.

Finally, the Supreme Court of the U.S.A. ruled that segregation on buses was **illegal**. The peaceful, determined efforts of the Montgomery negroes had won a great victory for black people all over the South. Now, more and more white Americans joined blacks in demanding that the government protect the rights of black citizens. In 1957, the Civil Rights Act was passed.

But the everyday life of the Afro-Americans in the South remained much the same, largely because of racial prejudice. The group of white Southerners called the "Klu Klux Klan" continued to murder or terrorize black people who tried to vote, enrol in "white" schools, or enter churches and other "segregated" areas. They also attacked white people who helped the blacks.

Martin Luther King and other civil rights workers continued to be very active. They moved from town to town encouraging black people to register their names on electoral rolls and to use the right to vote that was given them. Many were afraid that they might lose their jobs or their lives. But some took the chance, and slowly the number of black voters increased. The civil rights workers were under constant threat of attack, and many were killed.

Martin Luther King speaking at a Civil Rights rally

For his courageous struggle to obtain civil rights for Afro-Americans, Martin Luther King was awarded the Nobel Peace Prize in 1964. He was the youngest person ever to win this prize, which is offered each year to the person or organization in the world that has contributed most towards peace.

But because of the nature of his work, Martin Luther King had many enemies. In 1968, he was **assassinated**. He was only 39 years old when he died.

Today, black people in America are using their political power to attack the many problems created by racial prejudice. The difficulties are not yet solved, but a start has been made.

ACTIVITIES

1. *Explain the meaning of each of the following:*

   segregation ***prejudice*** ***boycott*** ***assassinate***
   civil rights ***slavery*** ***Nobel Peace Prize***

2. *Act a role play to tell the story of Mrs Rosa Parks and the Montgomery bus boycott.*

3. *Why can we consider Dr King's methods of protest as "non-violent"? Do you think that they are good methods of protesting against a law? In what other ways could the protest be made?*

4. *Why do you think Dr King was assassinated, and by* ***whom?***

5. *What conflicts occurred as a result of the Civil Rights Movement?*

6. *Study the Summary of the "Universal Declaration of Human Rights" (below) made by members of the U.N. in 1948.*

   Which of these human rights was Martin Luther King working to obtain?

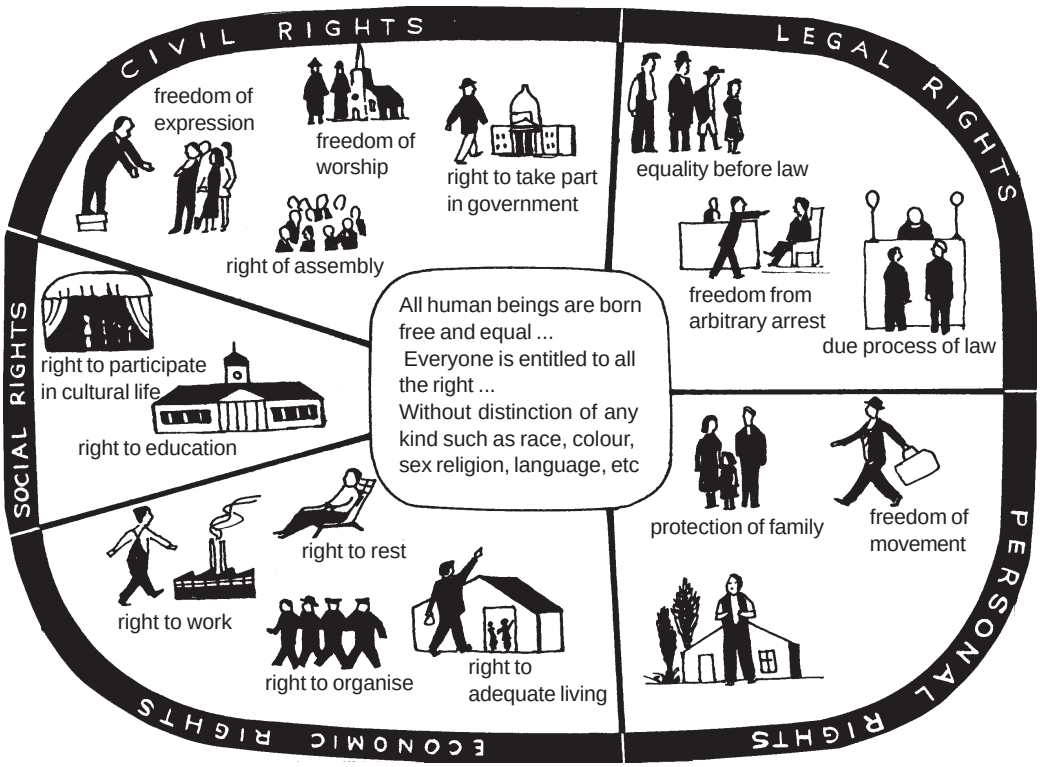
7. *Consult newspapers, magazines and library books, and write a short article on any two other individuals who have tried to change society.*

   Your article should cover the following points about each person:

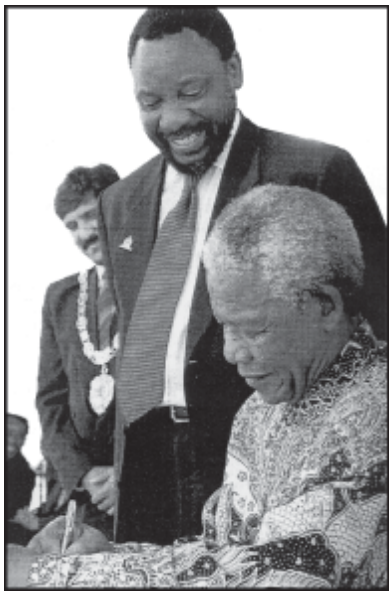
   a. Where he/she lives/lived. Draw a map if possible.
   b. What he/she has done.
   c. The methods he/she has used.

   If you wish, you may also draw their pictures.

The Universal Declaration of Human Rights



7. *Find out how President Nelson Mandela worked to put an end to "apartheid" in South Africa.*



President Nelson Mandela

8. *Tell the story of the struggle for independence in any one country of the world. Say how any individuals or political groups played (or are playing) a part in this struggle.*

Trade Unions

You have seen that in the early days of the Industrial Revolution, factory employees had to put up with very hard working conditions. They had no choice but to work long hours for low wages in noisy and dangerous conditions.

Gradually, however, the workers found that they could use their strength in numbers to form **trade unions**, and **bargain** with their employers for better wages and conditions. The first trades unions started in Europe and U.S.A. around 1800.

A trade union is composed of people who all do a similar kind of work. For example, in most countries the miners, the dockworkers, the teachers and the transport workers all have their own unions. Whenever the workers have a complaint about working conditions, the elected officers of the union hold discussions with the employers and try to get them to make changes. If this does not work, the union may ask its workers to "go slow", or even to stop work completely, or **strike**. If workers strike for a long time, then the factory, mine or office may have to close down. On the other hand, the company or government may simply dismiss the striking workers!

In "western" industrial countries, trades unions have succeeded in greatly improving the standard of working conditions. At the same time, strikes have become a common feature of life in nations such as U.S.A., U.K., West Germany, France and Australia. Workers continue to feel that their wages are not as high as they should be, and they threaten strike action if employers do not give them what they want.

The following newspaper extracts give some examples of recent strikes in Australia and Tahiti:

STRIKES DISRUPT AIR TRAVEL

An indefinite strike by TAA flight engineers and a three-hour stopwork meeting by Qantas ground officers at Sydney airport caused chaos for thousands of domestic and international air travellers yesterday.

TAA's fleet of 15 Airbuses and 727s has been grounded since midnight yesterday, but DC-9 and Friendship services operated extra flights to clear the estimated 14,000 passengers booked on flights throughout Australia.

Flight engineers voted in Melbourne yesterday to strike indefinitely in protest against plans to reduce the number of staff on Airbuses and 727s.

A spokesman for the Flight Engineers Union said that staff levels must be maintained in the intersts of public safety and members' job security.

STRIKE BY 110,000 PUBLIC SERVICE UNION MEMBERS

More than 110,000 Federal Government public servants are to go ahead with a national 24-hour stoppage on Monday.

The strike will go ahead despite a last minute attempt by the Minister for employment and Industrial Relations, Mr Willis, to prevent it.

Areas most affected by the strike will be the social security and taxation departments. Telecom business ofices, the Commonwealth Employment Service and some sections of post offices.

There will be some delays at international airports because of disruption by passport control officers and other immigration officials.

("Weekend Australian", December 1984)

STRIKE

Thirty percent of the staff at a Papeete brewery went on strike after two employees suspected of theft were presumed guilty by the management and fired. When a court ruled that the pair should be given their jobs back or given compensation, the company refused demands by the union to reinstate the pair. The strike began.

During the first weeks, the atmosphere stayed calm. Only a few roadblocks were built near the brewery. But talks failed. The union was known for its strong negotiating tactics, and the management was not willing to compromise. It was a stalemate.

Then the strikers went into the streets and raised road-blocks of wood and tyres in different parts of Papeete. In a clash between police and protesters, tear gas and rocks were thrown. More police were flown in from Noumea. Two brewery trucks were burnt.

("Islands Business", April 1995)

The world's largest trade union is "Solidarnose" (Solidarity) in Poland. It has over 8 million members.

Trade unions are very recent in Vanuatu. They formed after Parliament passed the Trades Union Act in June 1983. Under this law, any group of employees wishing to form a union must have at least 20 members, and the union must have proper written rules. Only after the union has been properly registered does it have the right to represent it members.

There are currently three trade unions in Vanuatu - the Vanuatu Teachers' Union (VTU), the Vanuatu Public Servants' Association (VPSA) and the National Union of Labour (NUL). The three trade unions come under an umbrella organization known as the Vanuatu Council of Trade Unions (VCTU) which has an office in Port Vila.

The aims of VCTU are to help the workers of Vanuatu to:

- receive higher wages for their work
- enjoy greater security in their working conditions
- increase their awareness of their workers' rights

The newspaper cuttings below show examples of recent strike actions which have been taken by trades unions in Vanuatu:

LAST ULTIMATUM FROM THE GOVERNMENT

According to the Vanuatu Teachers' Union, over 700 teachers are still on strike, despite repeated appeals from the Government for them to return to their posts. Since 26th May, 512 teachers have been suspended. During an interview on Radio Vanuatu that was broadcast on 12th June, Prime Minister Maxime Carlot Korman issued a final appeal to the strikers: those who do not return to work by Tuesday 15th June will be dismissed, and other persons will be recruited to replace them.

In the third week of the strike, there has still been no agreement between the Government and the Vanuatu Teachers' Union. The discussion meetings between the two sides have come to nothing. The VTU maintains its stand because it wants the two parties to reach a written agreement.

("Vanuatu Weekly", 12th June 1993)

VCTU BRINGS VANUATU TO A STANDSTILL

The Vanuatu Council of Trade Union's aim to bring Vanuatu to a standstill on Tuesday was achieved when its call for a nation-wide strike was heeded forcing offices and government services in Port Vila and Luganville to close for the morning.

Striking civil servants blockaded offices including the Vila Central Hospital, the government building, the Post Office, the Public Works Department Workshop, the Agriculture, Quarantine and Fisheries departments and the Domestic and Internatioinal air terminals before working staff members arrived on Tuesday morning for work.

They also put up notices, asking those working employees to go home because of the national strike.

(Vanuatu Weekly, 12th February 1994)

ACTIVITIES

1. *Interview a person who is a member of a trade union in Vanuatu. Find out:*
   a. *The name of the union*
   b. *When and why the person joined the union*
   c. *What benefits he/she gets by being a member of the union*
2. *Explain what is meant by each of the following, and give an actual example of each:*

   employer ***employee*** ***strike negotiations***
3. *Study the three newspaper reports on strikes in Australia and Tahiti (page 46), then answer these questions:*
   a. *In each of the three examples, which people went on strike?*
   b. *Why did the strike take place in Tahiti?*
   c. *What kinds of difficulties did these strikes bring to the general public? What did most people think of the strikers?*
4. *State the aims of the Vanuatu Council of Trades Unions.*

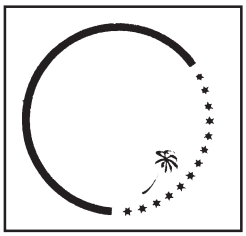
5. *Study the newspaper reports on the strikes that took place in Vanuatu in 1993 and 1994, then answer these questions:*
   a. *Which unions encouraged their members to go on strike?*
   b. *Why do you think that the strikes were called?*
   c. *What was the reaction of the Vanuatu Government to the strikes? What eventually happened to many of the strikers?*

6. *Group discussion:*
   What do you think of the whole idea of going on strike? Think about what life will be like for the strikers and their families, and the effect that striking has on other people. Consider the benefits that striking may bring.

   Then write three paragraphs. In the first one, you should state the advantages of striking. In the second, you can give the disadvantages. In the third, you can state your own opinion about striking.

The Pacific Community

S.P.C. flag, 1982



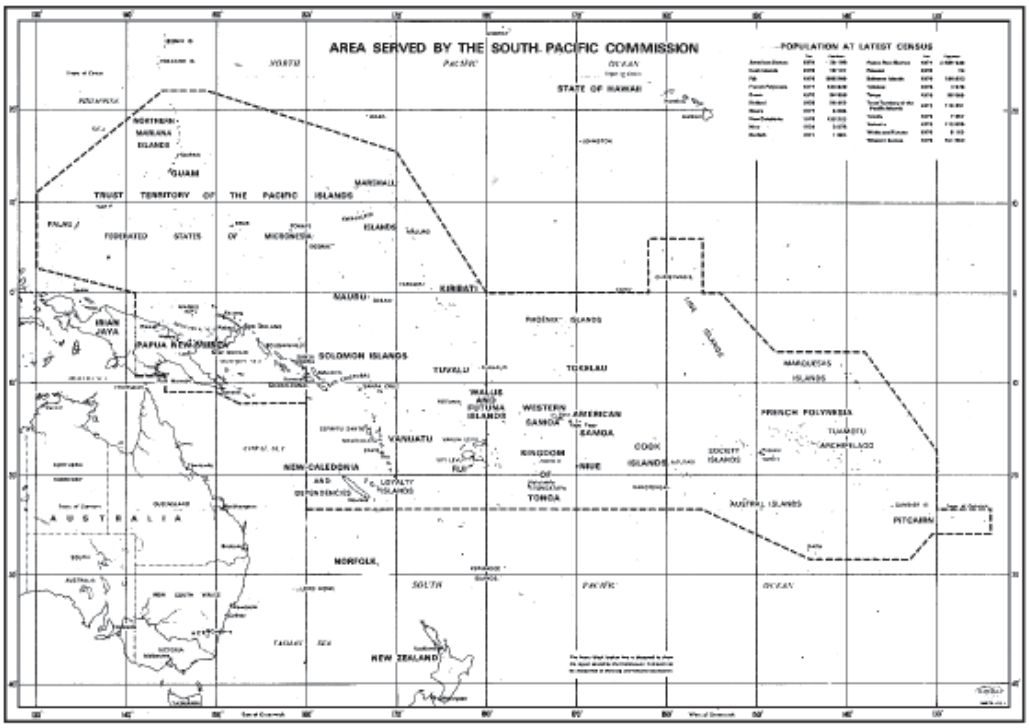
The Pacific Community (called the South Pacific Commission until the end of 1997) is a regional organization which was set up on 6th February 1947 by the six colonial governments who were then responsible for the administration of island territories in the South Pacific region. These were Australia, France, the Netherlands, New Zealand, United Kingdom and the U.S.A.

In 1962, the Netherlands withdrew from Indonesia, and its membership of the South Pacific Commission ceased. As the Pacific territories gained their independence, they were admitted to the South Pacific Commission: Western Samoa in 1964, Nauru in 1969, Fiji in 1971, Papua New Guinea in 1975, Solomon Islands and Tuvalu in 1978, Kiribati in 1979 and Vanuatu in 1980.

In 1983, the following territories were given full membership rights and responsibilities: American Samoa, Cook Islands, Federated States of Micronesia, French Polynesia, Guam, Marshall Islands, New Caledonia, Niue, Northern Mariana Islands, Palau, Pitcairn Island, Tokelau, Tonga and Wallis/ Futuna. In 1994, the Commission had 27 member countries and territories.

In 1996, Britain decided to resign from the South Pacific Commission, for financial reasons.

In October 1997, on the fiftieth anniversary of the organization, it was re-named the Pacific Community.



The Community's purpose is to advise the member governments on ways of improving the well-being of the peoples of the Pacific island territories. The Community's work programme provides for activities in the following fields:

- agriculture and plant protection
- coastal and oceanic fisheries
- rural development and rural technology
- community health (including **aids** and **stds** prevention)
- education services (especially for women and youth)
- information and statistical services
- cultural conservation and exchange

Note that the Pacific Community is *in no way* concerned with politics and defence. Neither is it a body that gives out funds to individual governments for large-scale projects. Its main task is to provide technical assistance to the region's 22 countries and territories, especially for social and economic development.

The Secretariat of the Pacific Community is is Nouméa, New Caledonia. At the head of the Secretariat is the Director General, who supervises its work. Under him are the Director of Programmes and his Deputy. The Community has a full-time staff of almost 200: experts in fields such as language teaching, mental health, youth work, audio-visual aids, rat control, demography, tropical agriculture and ecology, etc., together with administrative personnel, translators, typists and clerical assistants.

The policies and work programme of the Pacific Community are decided at the Conference of the Pacific Community, which is held every year in a different

location. All member territories send representatives to this very important meeting, which provides a good opportunity for Pacific islanders from all over the region to discuss their problems and exchange ideas.

Running an organization like this requires a large amount of money. Most of the funds are contributed by the members themselves. The 5 metropolitan governments (Australia, New Zealand, France, U.K. and U.S.A.) give 92% of the budget. The remaining 8% comes from the Pacific island territories. In addition, other funds are given by the United Nations and by universities and private organizations.

Some recent projects carried out by the Pacific Community:

- 0rganization of regional meetings to discuss such topics as the improvement of farming on coral atolls, deep sea fishing, better nutrition for mothers and children, etc.
- Training courses for island people in fields such as health education, boatbuilding, home economics, English teaching, compiling of statistics, operating computers, etc.
- Research into the improvement of fishing techniques
- Education in "community development" provided at the Community Education Centre at Samabulu, Fiji
- Preparation of educational broadcast tapes
- Advice on rural water supply and sanitation projects
- Mobile training unit for youth and community workers
- The South Pacific Regional Environment Programme, based at Apia, W. Samoa: advice to governments on better methods of resource conservation, ways to deal with climatic change, etc.
- The publication of the "Pacific Women's Newsletter"
- Research into the control of insect-borne disease such as dengue fever
- Technical advice on the running of a census
- Running a publications office in Sydney which produces a wide variety of booklets in English and French
- Encouraging the "Festival of Pacific Arts"

List of member countries of the South Pacific Commission in 1994, with the amount they contributed to the Commission's annual budget.

	(US$)	(%)
Australia	2331673	33.3
United States of America	1179755	16.8
New Zealand	1131184	16.2
France	971565	13.9
United Kingdom	426760	12.2
Cook Islands	17311	00.2
Federated States of Micronesia	27535	00.4
Fiji	38556	00.5
Guam	38556	00.5
Kiribati	17311	00.2
Northern Marianas	27535	00.4
Nauru	17311	00.2
Niue	17311	00.2
New Caledonia	38556	00.5
Palau	27535	00.4
Papua New Guinea	27535	00.4
Solomon Islands	17311	00.2
American Samoa	38556	00.5
Western Samoa	17311	00.2
Tokelau	17311	00.2
Tonga	17311	00.2
Tuvalu	17311	00.2
Vanuatu	17311	00.2
Wallis and Futuna	17311	00.2

ACTIVITIES

1. *Using the information from the table above, list the member countries of the Pacific Community under 3 headings:*
   - *a. Independent Pacific nations*
   - *b. Nations which govern or used to govern other island groups in the Pacific*
   - *c. Island territories which do not yet have full independence*
2. *a. Why do you think that there were 13 stars on the South Pacific Commission flag in 1982?*
   - *b. Draw a picture of the flag as you think it might look today.*
3. *Write one sentence only to answer each of these questions:*
   - *a. Who is the present Director General of the Secretariat of the Pacific Community?*
   - *b. Where is the Community Education Centre of the Pacific Community?*
   - *c. Where is the Pacific Community Publications Office?*
   - *d. In what year did the South Pacific Commission (now the Pacific Community) start?*

e. Which countries were the first members of the South Pacific Commission?
f. Where do the Pacific Community's funds come from?
g. How are the big decisions made about the work of the Pacific Community?

4. The Pacific Community has its Secretariat in Noumea. Do you agree that it should be there? Give reasons for your answer.

5. Name three ways in which the life of Pacific islanders is changing as a result of the work of the Pacific Community.

6. Find out about the following organizations that are working in the South Pacific. For each, state:
a. what the letters of the organization stand for
b. the work that it does
c. where its regional head office is

SPREP UNFPA EPOC (ESCAP) FSP ILO

CHAPTER 4
CHANGE BROUGHT ABOUT BY THE SPREAD OF PEOPLE, GOODS AND IDEAS

In this Chapter, we shall look briefly at changes in society that occur because of migration, tourism, trade, and the gradual, often accidental, spread of ideas from one part of the world to another.

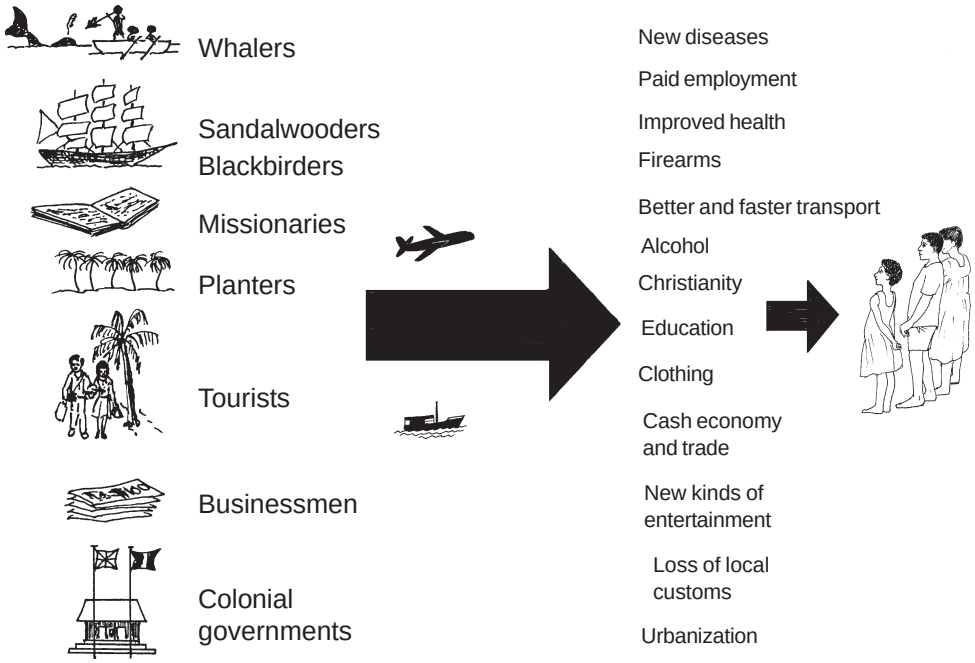
These kinds of change are closely linked to the changes described in Chapters 2 and 3. A new product resulting from a scientific advance in one country, for example a solar-powered electric generator, may be exported to the far side of the world and bring new amenities to remote mountain villages. Social and political changes produced in one country by individuals or groups, for example the right of women to vote, or independence from colonial rule, may be copied by people living in other countries.

A very important agent of change is the movement of people from place to place. Men and women holding a particular set of **values** may migrate to, or visit, another country and introduce these values to the local people there, either deliberately or accidentally. Migrants may also introduce new types of goods into an area that bring changes to people's lives. Urbanization is a very important

change resulting from industrialization and migration. To illustrate changes brought by migration and tourism, we shall look at the coming of foreigners to the Pacific islands.

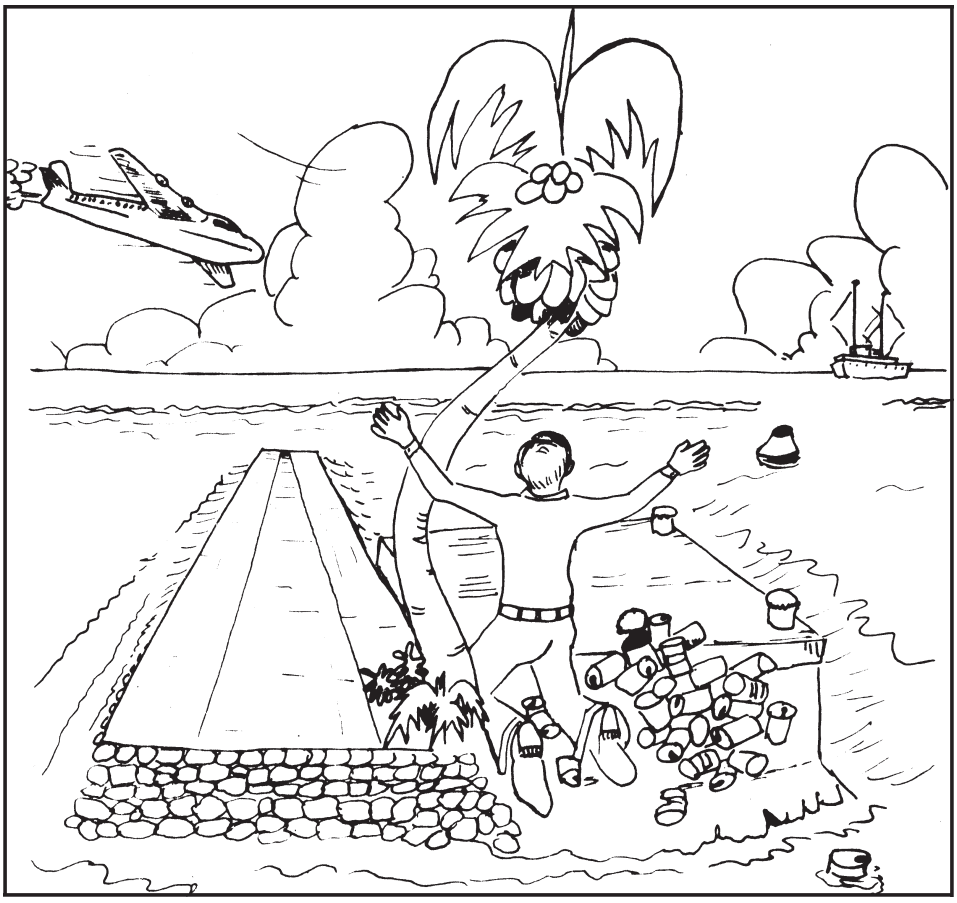
The spread of ideas from one society to another has been going on since humans first appeared on earth. However, it has been speeded up enormously during the 20th century, largely because of improvements in transport and communications, and through the increase in education. As more and more people learn to read, so they can find out for themselves about things happening in other parts of the world. Radio, television and films are also very important agents of change. To illustrate change brought about by the spread of ideas, we shall look at the changing role of women in Vanuatu, and at changes associated with new types of music.

The impact of outsiders on Pacific island society



A comparison between "traditional Pacific values" and "Western values".

TRADITIONAL	WESTERN
Dependence on extended family, with family obligations	Personal independence
Communal ownership of property	Individual ownership of property
Time is not so important	Punctuality is important
Wealth consists of traditional items Money is not so important	The money economy is of great importance
Respect and success are based on human relationships	Success is based on material gains, e.g. education, wealth



Pacific islanders have become more dependent on the outside world!

ACTIVITIES

1. *Using the diagram at the top of page 54, describe how any three groups of outsiders have affected life in the Pacific islands. Mention the benefits and the disadvantages they have brought or are bringing.*

2. a. *What do you understand by the term "**values**"?*

   b. *Study the table at the bottom of page 54 and then briefly state your own ideas regarding the following:*
      - *freedom*
      - *wealth*
      - *ownership of property*
      - *success*
      - *time*

   c. *Do you think that your values are different to those of your grandparents? Why might this have happened?*

3. *Group work: Using the information on page 54 and the picture on page 55, discuss, giving reasons, whether you think "foreign impact" on the Pacific islands has been good or bad.*

Women in society

The changing role of women in Vanuatu

The following article was written several years ago by Mrs Votausi Mackenzie, a nutritionist who runs her own catering business in Port Vila. Mrs Mackenzie was educated at Malapoa College, Nelson Girls' High School (New Zealand), and the South Australian College of Advanced Education (Adelaide, Australia). She worked as a secondary school teacher before going into the field of nutrition and taking up her present job. She is married to Mr Geordie Mackenzie and has five children - four boys and a girl.

"In the past, ni-Vanuatu women were recognized as child-bearers, producers of food crops for their families, and raisers of pigs and other domestic animals. Women never questioned their traditional role. If they refused to carry out their duties, they were severely punished: either by paying heavy fines, or by being beaten up, or even, long ago, by death. It was essential for women to carry out these tasks since there was a great deal of tribal warfare. The men's job was to protect their families or clans against their enemies. The men were armed warriors while the women did most of the household work.

Today, the men are no longer warriors fighting against other clans or tribes. They have taken over some of the women's jobs like raising domestic animals, and gardening. Many women have become independent and are doing work that has normally been done by men.

There are several factors that have contributed to changes in the role of women in Vanuatu. One of the earliest was the coming of Christianity. Christianity brought about peace between the various tribes and islands. Later, when the French and British colonized these islands they made laws to stop the indigenous people from killing one another, and they punished those who broke these laws. Tribal war gradually diminished, and the men had to occupy their time with other activities. They began to take over some responsibilities that were traditionally the women's.

The second, and probably the most important factor, is education. The education of women was a slow process. Most fathers were reluctant to send their daughters to school since they thought that the only training a woman needed was simply to learn how to become a good child-bearer, housekeeper and gardener. In general, fathers thought that their daughters only needed to learn how to serve their husbands and other male relations. Many parents believed that their daughters were not as clever as boys, and were not capable of learning much more than the knowledge required by their expected roles.

But gradually, as more schools were built and educational opportunities became available, more and more girls started to attend primary and then secondary schools. Several have now attended universities and colleges, proving that they are just as capable as boys if the chance is given to them.

After receiving an education, women have begun to take up jobs in the towns, and become ***bread-winners*** *in their own right. This is when a woman's role in society really changes. She becomes independent, in other words, she supports herself instead of having to wait at home for a chosen husband to come along, marry her, and take her away to work his land and raise his children and animals in exchange for security. Women are no longer just mothers. They are teachers, nurses, typists, interpreters, business owners, bank tellers, accountants and lawyers. And the list goes on.*

Education not only gives women their independence. It also gives them self-confidence and awareness of their society's development. They become capable of using their various skills to help the whole progress of the country, if the men will let them.

Apart from education, there are some other minor factors that have helped to change women's roles in Vanuatu society: tourism, the media, and travel.

Tourists have an effect on ni-Vanuatu females through their style of dress and

their public behaviour. Local girls imitate the tourists and end up with different attitudes and values to those of ni-Vanuatu girls living in the villages. They may no longer think that marriage, raising children and performing domestic chores are the most important things in life: instead, they may want to earn as much money as they can, buy nice luxuries, travel and enjoy life.

I see the ***media****'s effect as encouraging women to take up new kinds of work or career. By watching films and videos, listening to the radio and reading magazines, ni-Vanuatu women learn of females in other parts of the world working in jobs that have traditionally been held by men: female detectives, female wrestlers, female air traffic controllers, female doctors, and so on. Young girls are easily influenced by such things.*

The improvements in infrastructures mean that it is so much easier nowadays to travel to and from Vanuatu. Ni-Vanuatu females who have a chance to go overseas for study or a holiday are often exposed to new ways and ideas, and on their return may pass on these ideas to their friends. Examples of such ideas are: equal pay for women and men who are doing the same job, and the sharing of domestic chores between husband and wife if they are both out each day earning a salary.

Another important reason for the changing role of women today is that some women are becoming "single parents". If a mother and father separate and the man leaves the woman to look after the children herself, then she must play the role of both father and mother.

Should women only carry out the traditional role that is expected of them by men, or should they take on a new role? It is impossible for me to decide, since much depends on each individual. Today, many women are finding that if they want to change their role and have more independence, their men do not like it, and a crisis occurs in the home. This happens, for example, when a woman makes sport her priority and neglects her domestic chores. Since some kind of change in the woman's role is necessary if Vanuatu is to keep pace with the rest of the world in social and economic development, perhaps it is the men who should try to show more understanding and try to give their women more assistance in the home.

An interview with Mrs Grace Molisa

Grace Molisa is very well known in Vanuatu. After her education in Ambae and Auckland, New Zealand, she returned to Vanuatu to work as a teacher. Between 1970 and 1973, she was the first woman to become a primary school headmistress in the country. After completing her Bachelor of Arts degree at the University of the South Pacific, she married Mr Sela Molisa, and then held a number of high level posts in the Government, including the position of Second Secretary in the Prime Minister's Office. She has written many books, such as "Black Stone", and is active in politics and women's affairs. She and her husband have raised three children - one girl and two boys.

Here are her replies to three questions:

Q. What sort of conflicts do you come across between your working life and your obligations in the home?

A. I never knew anything about any difference between a working man and a working woman until I came to Vila. I worked a long time before coming to Vila, first as a teacher, and then as the head teacher of a co-educational senior primary boarding school. At that time, I was the only ni-Vanuatu woman head-teacher in the country. But I didn't feel that being a woman at that level was anything special. As far as I was concerned, I was just doing a job. But in Vila, which is a "melting-pot" of many of our cultures, things are different. I hear people saying "women do this...." and "men do that.....". Others see conflicts where I don't see any. If there are conflicts between men and women, they arise out of fear or ignorance. If everybody is reasonably communicative and understanding, then I don't see any need for conflict. It is the same thing in the home. If husband and wife can talk things out and come to an understanding on their family life, careers, and other issues, I can't see any room for conflict. The possibilities are always there, but surely the Almighty Who put us here also gave us the means whereby we can overcome such difficulties.

Q. What do you think is the role of women outside the home?

A. It's a difficult question, and I for one do not like the term "role of women". I have always operated in the home and outside it! Before coming to Vila, I never had any problems working as a woman or working among men. I think the question arises in Vila because so many people are confused between Western ideas and thoughts and their own traditional life style.

We talk about the role of women because of our formal educational backgrounds, and because we are wanting to communicate internationally. But really, ni-Vanuatu do not need to talk about the role of women. Everyone knows what it is. If "role" means "work", Vanuatu women have never been short of work in history, they are not short of work now, and they will continue to be over-burdened with work in the future. However, there is something that does require action now, and that is to ensure that in our new ways of development there is justice for ***everyone****. All*

jobs inside and outside the home should be equally shared between women and men so that men can understand domesticity and women can understand public life. If life is easy for men, they should make sure that life is equally as easy for women and children.

Q. *What do you think about the position of women today in Vanuatu society?*

A. *People who have moved into town or have moved beyond their traditional boundaries and had a formal education, talk about these things, and perhaps feel that some changes have been made. But in general, I don't really think that very much has changed. If we go back and live in the villages, we can easily see that the bulk of ni-Vanuatu still live the same daily life and have the same concern for their families that they always had. Although today there are many more young women who are having a better education than before, we must realize that the whole population too is much greater, and the proportion of educated women has not changed that much.*

Today, women have access to things that they did not have access to before - good education and responsible jobs. But for some reason they are not there. The opportunities are open for women to enter other fields apart from teaching, typing and nursing, but the women are not taking advantage of the opportunities. Something is preventing them from feeling confident enough to break into new fields. There ought to be women in the higher levels of all decision-making bodies in all walks of life in Vanuatu - more women directors and managers, for example.

After nearly 20 years of living in Port Vila, I see that women are still badly discriminated against. Many obstacles placed in the career paths of women do not exist for men. Take, for example, elective politics. Elections are open to both men and women. But women do not stand as candidates and women are not elected. Parliament is the place where important decisions are made that impact directly on the lives of each man, women and child. Why are the women not there?

Men can't speak for women
Men are not women
Men don't get pregnant
Men don't give birth
Men don't breast feed
Men don't know
How women think, feel and cope
With the life women live.

The future of Vanuatu, the quality of government and the quality of life generally can only improve for everyone when men and women are able to freely communicate, talk together, decide together, and work together at all levels of decision-making. Equality begins in the home.

The Lady Mayor of Luganville

One person who demonstrates the changing role of women in Vanuatu is Mrs Merelyn Arnambath, of Malakula. After her election to the Luganville Municipal Council in 1995, she was chosen as Mayor for nearly two years, so becoming the first woman in Vanuatu to hold such a position. As Mayor, she ran the meetings of the Municipal Council, and ensured that its decisions were carried out.

ACTIVITIES

l. According to Mrs Mackenzie:

a. What are 5 factors that have helped to change the role of women in Vanuatu society?

b. In what ways has education been of benefit to female ni-Vanuatu?'

2. How does Mrs Molisa say that conflicts between husband and wife regarding family life and career may be resolved?

3. According to Mrs Molisa, the opportunities are present today for girls to take up many new types of work and career, but they are not taking full advantage of these opportunities. What do you think is stopping them?

***4.** How do both Mrs Molisa and Mrs Mackenzie see the future role of men and women in the home? Do you agree?*

5. Choose one prominent woman in Vanuatu <u>other than</u> Mrs Mackenzie and Mrs Molisa. Explain why this person has become famous, and try to find out <u>three</u> facts about her life. (Think of people like Vanuatu's first lady mayor, Vanuatu's first woman pilot, etc.)

6. How can a woman be successful at her work and at the same time bring up a family properly? Think of women both in the villages and in the towns.

Popular music

Bob Marley,
from Jamaica

Lucky Dube,
from South Africa

Cover of a cassette
recorded by
“Vatdoro”, Vanuatu

ACTIVITIES

1. *Make a list of ways in which young ni-Vanuatu are influenced by famous singers such as Lucky Dubé and Bob Marley.*

2. *Choose any one "pop star" (local or overseas), and find out something about his/her life. Organize your information under these headings:*
   a. *Birth date and country of origin*
   b. *Brief story of his/her life*
   c. *Some of his/her best known songs*
   d. *Why you think he/she has become famous*

3. *Some people do not like Lucky Dubé, Bob Marley, Michael Jackson or other "reggae", "rock" and "pop" musicians.*
   a. *What arguments do they use to stop young people from listening to this music?*
   b. *What kinds of conflict may occur in families over "pop" music?*

4. *What is your view about popular music and its effects on young people?*

CHAPTER 5
CHANGE BROUGHT ABOUT BY ALTERATIONS TO THE NATURAL ENVIRONMENT

Alterations in the natural environment may be very sudden, as with an earthquake, a hurricane or a volcanic eruption. On the other hand, they may be gradual, as with a climatic change, or the slow sinking of land under the sea.

Sudden physical changes often do great damage to buildings, transport and agriculture, with loss of life and hardships for the family. But through cooperation, hard work and foreign aid the difficulties are usually overcome.

The longer-term changes are different.There is often no real solution, except emigration from the affected areas, usually to other, already overcrowded regions.

It is worth mentioning that some of these physical changes in the environment are in fact *man-made*. Deforestation, for example, may also lead to the erosion of soil and the loss of valuable farmland; it may also lead to a decline in rainfall, and **drought**.

We shall look at three examples of this kind of change - the effects of cyclones in Vanuatu, the increasing spread of desert areas around the world, and long-term climatic change.

Cyclones in Vanuatu

"NIGEL" LEAVES THOUSANDS HOMELESS AND HUNGRY IN THE NORTH !

Thousands of dollars worth of Disaster Relief Aid in terms of food, clothing, temporary shelter, communications equipment, and Australian Army personnel, have been airlifted in to the islands of Santo/Malo, Ambae, Maewo, Pentecost, Ambrym and Malakula to support the thousands of homeless and hungry victims of "Cyclone Nigel" which in an hour flat at mid-day on Friday last week, took everyone by surprise wrecking ships, uprooting houses and trees, devastating gardens and plantations, ripping off fences, and scorching the entire greenery of the land, leaving behind a bewildered and shaken people and a trail of total destruction !

SANTO / MALO

The Disaster Relief Committee in Luganville estimated that over 50 % of Santo's population of 16,242 (1979 census) are now homeless and without food. Malo Island, Luganville, the IRHO Station, Fanafo, Big Bay, Matantas, Shark Bay, and Wusi, were some of the areas worst hit. Some sizable ships particularly in Luganville, today still remain on dry land - a living proof of the ferocity of "Cyclone Nigel".

AMBAE

Nobody including the old people could remember and compare the strength of the cyclone with a similar one previously. The Western and Eastern regions of the island were almost entirely flattened ! An estimation was that 90 % of all thatched houses in the island were destroyed.

Vuilakalaka School in the West and Vureas High School in the East will require complete reconstruction before classes can resume this year. The Lolowai Hospital was extensively damaged. The cargo vessel MV Luna now rests in front of the Lolowai Post Office ! A naked concrete floor is the sole indication of where the Ambae/Maewo Local Government Headquarters' Office used to be. Numerous co-operatives and private stores were damaged. Elderly Charlie Tom from Longana became "Cyclone Nigel's" victim in Ambae when his house fell on top of him, he died and was buried the next day.

Most regions of the islands of Maewo and Pentecoset were also ravaged.

Cyclone Nigel blows 'Nalkutan' and 'Luna' out of service

VANUATU WEEKLY 26/01/85

The Ports and Marine's tug boats, 'MV Moli Vatu' and 'MV Roimata' have this week been engaged in the re-floating of vessels beached by high seas and winds in Luganville harbour during cyclone Nigel.

The Director of Ports and Marine, Captain David Enever said 'Moli Vatu' has been doing "pretty well" at Luganville prior to the arrival of the Vila-based 'Roimata' to assist in the rescue operation.

Captain Enever said the 'MV Nalkutan' of Vanua Navigation was a "total loss". The 'MV Luna', ex-Misima owned by a Walaha-based company of West Ambae was wrecked at Lolowai harbour and was reported to be a write-off.

'Roimata' will be at Loltong, Pentecost, this week to help refloat the 'MV Aurora'.

Thirteen trading vessels were washed ashore during cyclone Nigel. Most of them are now back in their inter-island trading schedules.

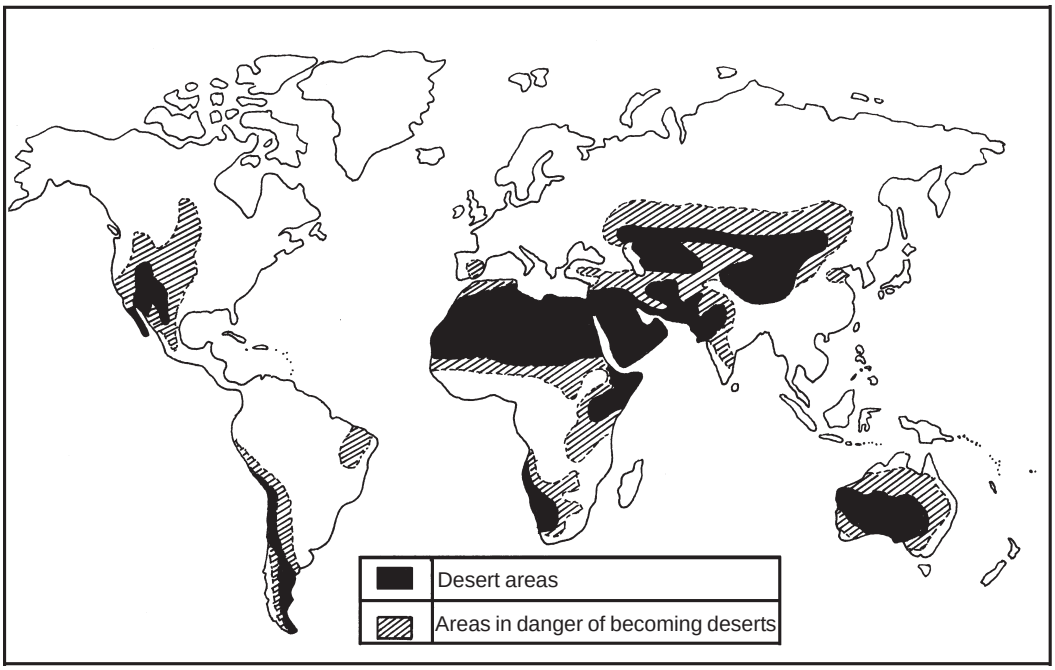
ACTIVITIES

1. *Name one cyclone that affected Vanuatu in recent years. State the day(s), month and year when it passed through the country, and the islands that received the most damage. If you can, draw a map to show the cyclone's* ***track****.*
2. *With the help of the photographs and newspaper extracts on pages 64 and 65, and any other articles that you can find, describe the kinds of difficulties that affect people in Vanuatu after a severe cyclone. Give actual examples if possible.*
3. *What kinds of migration may take place after a severe cyclone has passed through the islands?*
3. *What should people do to prepare themselves and their homes when they know that a cyclone is coming?*

Desertification and the disappearance of forests

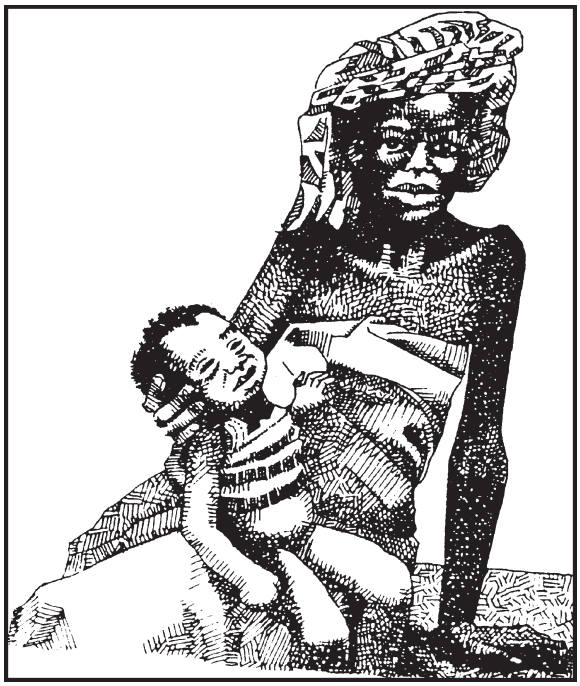
Desert sand-dunes encroaching on bush and farmland, N.E. Africa

The world's deserts

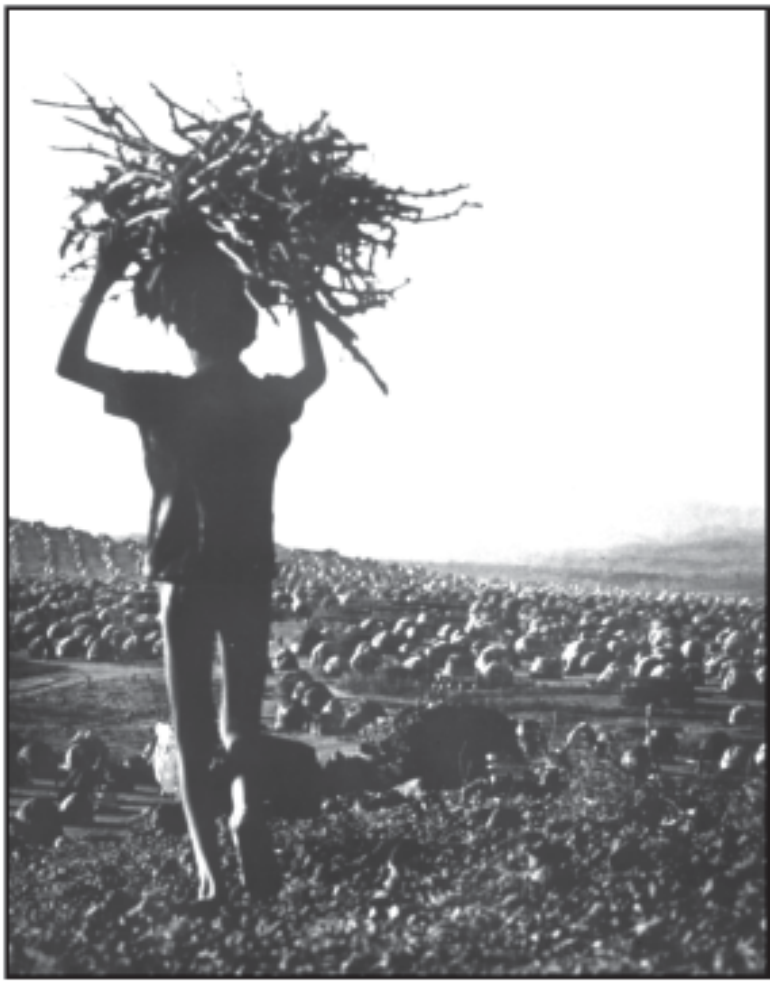


Desert, or **arid**, areas already cover about one third of all land on earth. They are now starting to spread into the **semi-arid** areas that lie between true deserts and wet areas. In the semi-arid areas live about 1,000 million people, or 20% of the world's population.

This spreading of desert conditions is largely caused by humans. People in the semi-desert areas have been keeping too many cattle, goats and sheep, which have eaten up the grass. Trees and bushes have been cut for firewood. Land has been cleared for farming when it is not really suitable for cultivation. And irrigation techniques have not been used carefully enough, causing a layer of salt to spoil the ground.



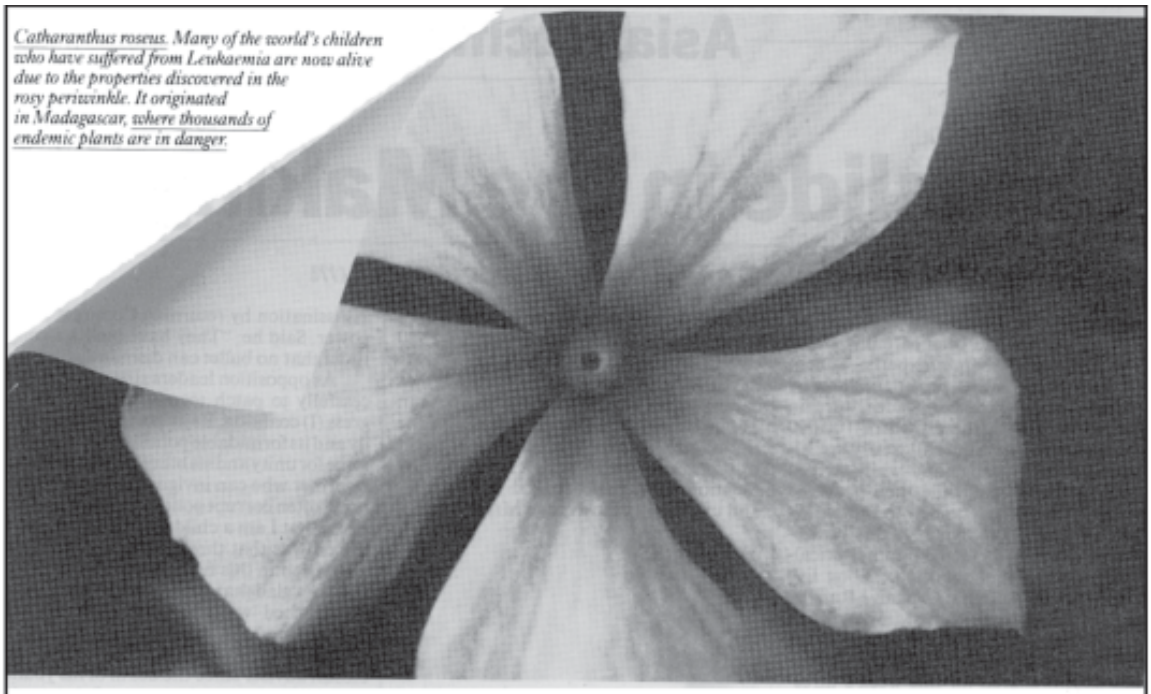
As the population in semi-arid regions increases, so there is less and less food. Starvation and **famine** are now common, and millions of people are dying.



Gathering firewood in Somalia, N.E. Africa. The round objects in the middle of the photo are huts in a refugee camp, built by people fleeing from war and famine

ACTIVITIES

1. *Name four causes of **desertification**.*
2. *On an outline map of the world:*
   a. *Shade the desert areas in yellow and print on their names.*
   b. *Shade in red the areas that are in danger of becoming deserts.*
3. *State two ways in which peoples' lives in the semi-arid lands are changing as a result of desertification.*
4. *According to the extract from "Time Magazine" shown on page 68:*
   a. *How rapidly is man destroying the tropical rain forests of the world at present?*
   b. *What is the main disadvantage of destroying tropical rain forests?*



Catharanthus roseus. Many of the world's children who have suffered from Leukaemia are now alive due to the properties discovered in the rosy periwinkle. It originated in Madagascar, where thousands of endemic plants are in danger.

Plants have fed the world and cured its ills since life began. Now we're destroying their principal habitat at the rate of 50 acres every minute.

We live on this planet by courtesy of the earth's green cover. Plants protect fragile soils from erosion, regulate the atmosphere, maintain water supplies for agriculture and prevent formation of deserts. Without plants man could not survive.

Yet, knowing this, we are destroying our own life-support system at such an alarming rate that it has already become a crisis – a crisis for ourselves and an even bigger one for our children.

The figures alone should tell the story – we destroy a tropical rain forest three times the size of Switzerland every year; within 25 years only fragments of the vast Malaysian and Indonesian forests will remain.

What we are destroying

Much of the food, medicines and materials we use every day of our lives is derived from the wild species which grow in the tropics. Yet only a tiny fraction of the world's flowering plants have been studied for possible use. Horrifyingly, some 25,000 of all flowering species are on the verge of extinction.

Once the plants go, they are gone forever. Once the forests go only wastelands remain.

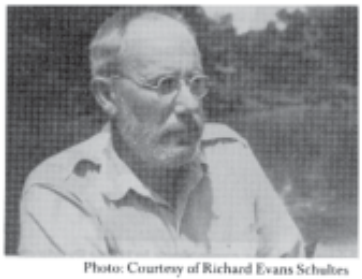


Photo: Courtesy of Richard Evans Schultes

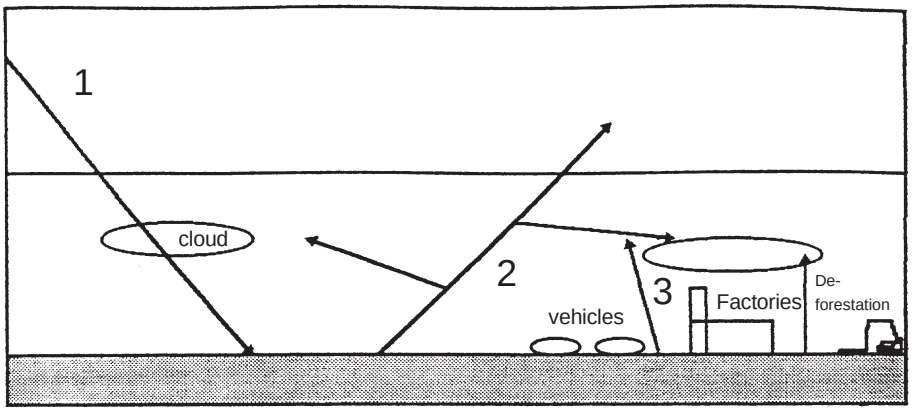
Dr. Richard Evans Schultes, director of the Botanical Museum at Harvard University, has spent 13 years in the Amazon jungle collecting the 'magic' plants of myth and legend and making them available to Western medicine and science. "The drugs of the future," he says, grow in the primeval jungle."

Who is the villain?

There is no villain – except ignorance and short-sightedness. The desperately poor people who live in the forests have to clear areas for crops and fuel, but they are doing this in such a way that they are destroying their very livelihood.

Add to this the way in which the heart is being ripped out of the forests to meet the demand for tropical timbers and we have a recipe for disaster.

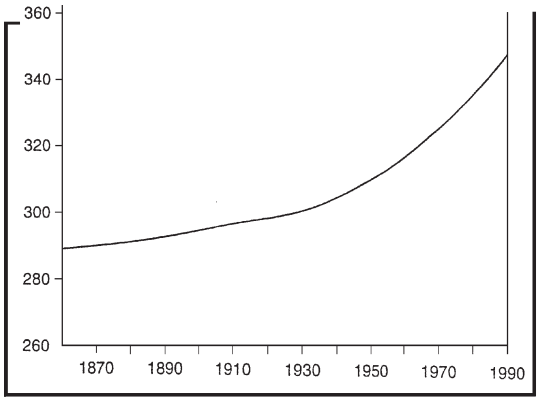
Global warming



The diagram above shows how the gases of the earth's atmosphere are like a blanket that keeps the earth warm. The carbon dioxide, water vapour and methane in the air are able to let the **solar radiation** pass through (**1**), but trap some of the outgoing infra-red radiation from the earth (**2**), so making the earth much warmer than it would be if there were no atmosphere. This is called the **greenhouse effect**, and it is perfectly natural.

But in the last 200 years, since the Industrial Revolution started, the quantities of the "greenhouse gases" - carbon dioxide, methane and CFCs - have begun to increase (**3**). Carbon dioxide levels have risen because of the burning of fossil fuels (particularly coal and oil) in power stations, industries, motor vehicles and aircraft; they have also increased because of **deforestation**, since there are fewer and fewer trees to absorb the carbon dioxide. Extra methane is being put into the atmosphere from rubbish tips, rice fields and cattle ranches. CFCs (chlorofluorocarbons) come from aerosol sprays, refrigerators and the burning of plastic.
Most scientists now believe that the increased carbon dioxide, methane and CFCs in the atmosphere are slowly causing our temperature to rise. It is expected to increase by between 1° C and 4° C within the next 30 years. This is known as **global warming**.

The CFCs are also eating into the layer of ozone gas that occurs in the atmosphere; these holes in the ozone layer allow greater quantities of the sun's ultra-violet rays, which are very dangerous, to reach the earth.



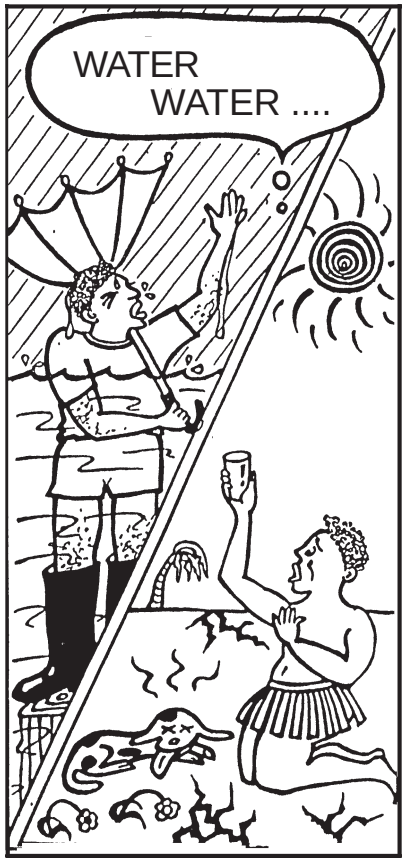
Amount of C02 in the atmosphere, in parts per mill.

This global warming is likely to have some far-eaching effects:

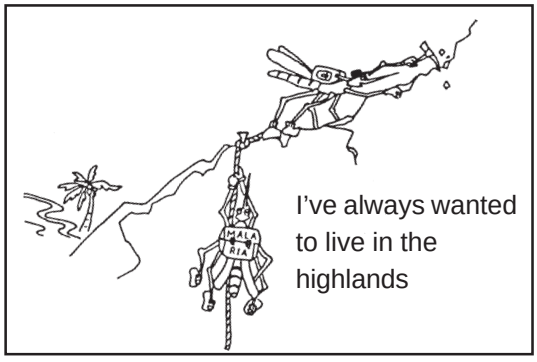
- There could be a rise in sea level of 1 - 2 metres by the year 2050, due to the expansion of ocean waters and the melting of polar ice. Some coral atolls in the Pacific could disappear! Low-lying areas near the coast may become flooded and **saline**, making them useless for agriculture.

- Cyclones and flooding are likely to be stronger and more frequent in tropical areas.

- Some areas such as Australia and Africa may become drier, while others may be wetter. This will affect crop production and food supplies.
- Many wildlife species may become extinct because their habitat will disappear.
- In the Pacific, many coastal towns will face increasing problems of sewage disposal and flooding. At the same time, the loss of farmland in coastal areas will cause greater rural-urban migration!



- Tropical, mosquito-borne diseases (e.g. malaria, dengue and yellow fever) may spread to new areas.
- In the Pacific islands, the greater amount of CO_2 in the air may lead to increased humidity, greater rainfall, and increased **photosynthesis**. Crops and weeds may grow faster!

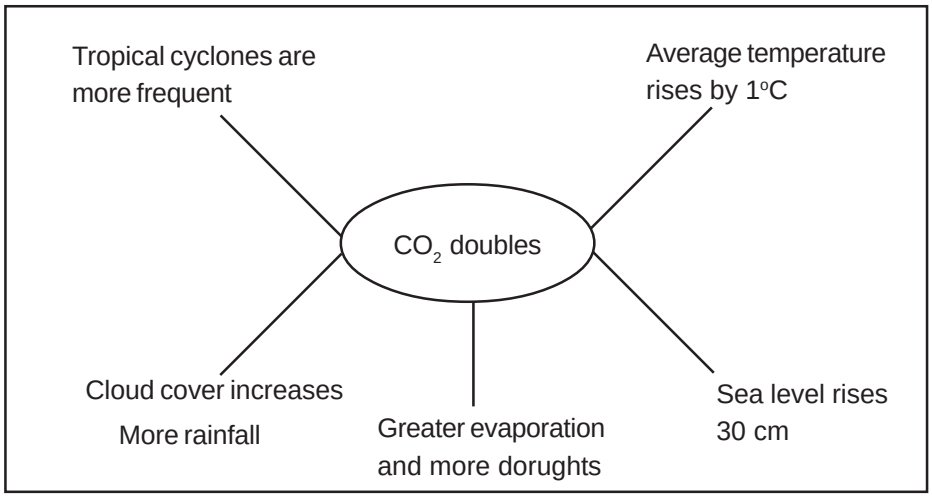


ACTIVITIES

1. *Describe <u>three</u> kinds of human activities that are causing global warming.*

2. *State <u>three</u> ways in which global warming may affect the lives of people in Vanuatu in the next 50 years.*

3. *Copy the star diagram below to show the possible effects of a doubling of $C0_2$ levels in the next 50 years:*



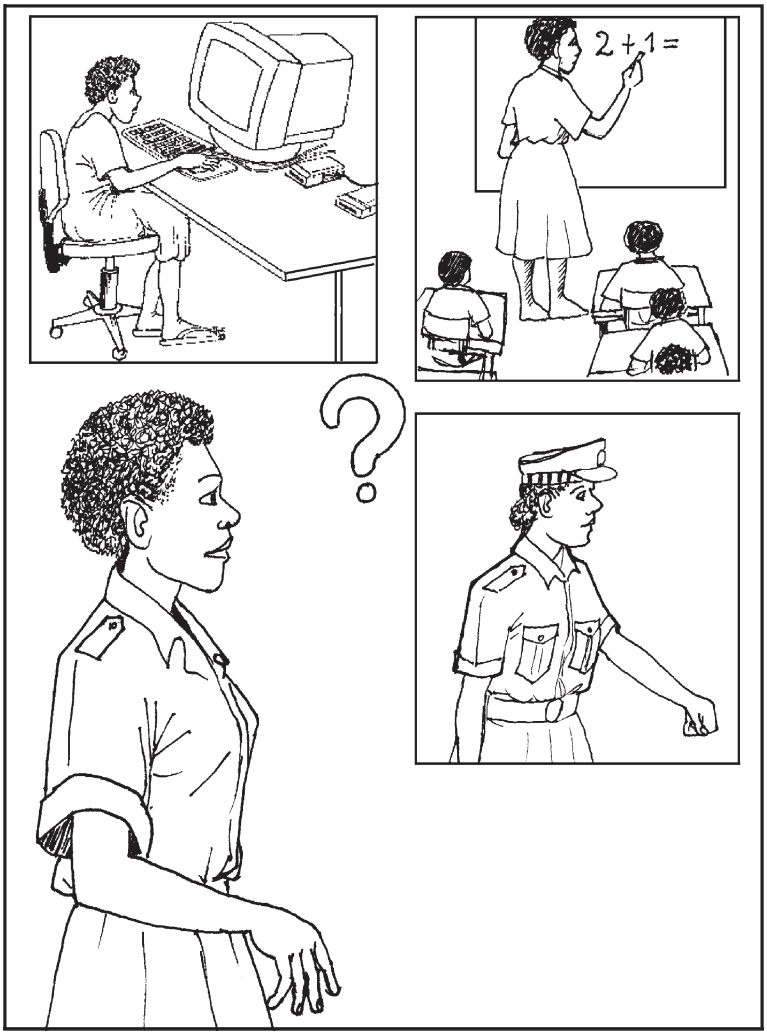
Next to each label, you can draw a small picture to show that change. For example, the rise in temperature could be shown as a graph, or by a picture of a person wiping the sweat from his brow.

4. *<u>Group discussion</u>: How can the problem of global warming be solved? How, for example, could the following help?*
   - *Re-afforestation of coastal areas*
   - *Building sea walls*
   - *Crop-breeding to produce species that are more drought-resistant and salt-resistant than at present*
   - *Encouraging national leaders to press for more international co-operation in dealing with the basic causes of sea level rise - especially the reduction of fossil-fuel burning, and deforestation.*

5. *Draw a large map of your island. On this, show the densely populated areas (/////), and the sparsely populated areas (▭). Leave the uninhabited areas blank. Now colour in those areas that could be affected by a rise in sea level of 1m in the next 100 years. Comment on what your map shows. Would many people have to move away, and where to?*

6. *Ask you teacher to show you how to play the **Pacific Greenhouse Game** (See Appendix B, page 85).*

CHAPTER 6
CHANGE AND YOU



0ne of the most important changes in your life is going to take place in a few months' time, when many of you will be leaving your present school. Some of you will be continuing your education, but most of you will be thinking about some kind of work or employment.

All of you should be considering the kind of work you want to do when you eventually leave school, and about the **skills**, **qualification and experience** you will need to do such work.

A brief list of common jobs in Vanuatu

Mechanical/Technical
Architect
Boatbuilder
Carpenter
Cook
Draftsman
Electrician
Engineer
Fitter
Mechanic: Aircraft
Diesel
Motor
Radio
Refrigeration
Ships
Pilot
Plumber
Surveyor
Technician: Computer
Electronics
Telecom.
Welder

Unskilled
Cleaner
Gardener
Housegirl
Kitchen hand
Labourer
Messenger
Porter
Waterside worker

Clerical
Accountant
Broadcast officer
Clerk
Customs officer
Library assistant
Newspaper reporter
Secretary
Statistician
Telephone operator
Typist

Outdoor
Agricultural officer
Air hostess
Builder
Civil engineer
Driver
Forestry officer
Geologist
Health inspector
Painter
Plantation manager
Police officer
Ship's captain
Signwriter
Surveyor
Surveyor assistant
Veterinary officer

Administrative
Director of Gov. dept.
Gov. admin. officer
Prov. Gov. secretary
Ministerial secretary
Newspaper editor
Plantation manager
Police inspector

Numerical
Accountant
Air traffic controller
Bank clerk
Bookkeeper
Cashier
Computer operator
Computer programmer
Economist
Engineer
Gov. administrative officer
Insurance clerk
Ledger machine operator
Statistician
Stock controller

Social
Community worker
Diplomat
Doctor
Judge
Lawyer
Nurse
Politician
Pastor
Social worker
Teacher

Sales
Business manager
Cashier
Receptionist
Sales assistant
Shopkeeper

Scientific
Agricultural scientist
Chemist
Dental officer
Doctor
Dresser
Laboratory technician
Meteorologist
Nurse
Nutritionist
Pharmacist
X-Ray technician

Artistic
Art/Music teacher
Architect
Author
Chef
Dressmaker
Hairdresser
Jeweller
Musician
Painter
Wood carver

NOTE:
Some of these jobs are listed more than once, under different headings.

Examples of job advertisements from "Vanuatu Weekly"

ASSISTANT ENGINEER

Greater Pacific Computers requires the service of an Asistant Engineer with the following qualifications and/or experience:

- Computer (Hardware) and Printer maintenance-testing Setup and Installation.
- Working knowledge of DOS, Windows and commonly used software programmes.

The applicant should speak Bislama and English. Preference to Ni Vanuatu citizens. Apply in writing to:

The Technical Services Manager
P.O. Box 188, Port Vila

ASCO MOTORS VANUATU - POSITION VACANT
SALES CADET

Asco Motors, Vanuatu's largest automotive distributor, has a vacancy for a Sales Cadet. This position is a front line sales position selling new and used vehicles as well as Yamaha, Rover and Fisher & Paykel products.
The successful applicant will ideally possess all or most of the following attributes:-1) Previous selling experience 2)Knowledge of the automotive business 3)Be strongly customer orientated 4)Be conscientious and reliable 5)Speak English, French and Bislama (ideally fluent in French) 6)Have a high education level with good grades.
Applications in writing setting out previous employment and education history should be addressed to:-
The General Manager, Asco Motors Vanuatu, PO Box 18, PORT VILA

"BARMAN/WAITER -WAITRESS/ HOUSEKEEPING ROOM ATTENDANT"

Having previous experience in same or similar job essential. High school leaver
Now accepting candidates for Training School Blong Yumi.
Apply to above vacancies by telephone appointment.
HUMAN RESOURCE DEPARTMENT
LE MERIDIEN PORT VILA, RESORT & CASINO
PO BOX 215 PORT VILA

THE OMBUDSMAN WANTS TO RECRUI

an
INVESTIGATOR-IN-TRAINING
(male or female)

for the Language Rights / Multilingualism Department of her office
If you have an education of tertiary level or equivalent, some relevant professional experience, computer skills, initiative and above all a strong will to enhance the citizens' right to be served by government institutions in the official language of their choice, please send an application, under your own hand, together with your resume to:
Office of Ombudsman, P.O.Box 126, Port Vila
by 24th February 1997. Salary will depend on qualifications.

CLEANER OFFICER
NATIONAL HOUSING CORPORATION

There is a vacancy for this position within the the National Housing Corporation.

The applicant must be familiar with office cleaning and be able to ensure the role of a messenger for the company.

rson with the necessary experience is
d to submit her application.

tions to: Acting General Manager
National Housing Corporation
P.O.BOX 982 Port Vila

Recruitment Notice

VBTC wishes to recruit a qualified Journalist for TELEVISION BLONG VANUATU - preferably a female - to Present News in English language and Programmes on TBV.
The applicant must be fully qualified in the fields of Journalisim, and must be competent in Writing and Reading News in front of Television camera.
Interested candidates please respond in writing to the Manager, Television Blong Vanuatu, PMB, 049, Port Vila immediately.

ONLY QUALIFIED AND COMPETENT PEOPLE NEED TO APPLY.

PARIS SHOPPING
POSITION VACANT

POSITION: SALES PERSON

AGE: 20 YEARS AND OVER

QUALIFICATIONS: Must be fluent in English, French and Bichlamar. A few knowledge in beauty products would be greatly appreciated.

EXPERIENCE: Minimum 3 years experience in a similar position.

Interested candidates must contact the
Manager
Paris Shopping
P.O. Box 248 PORT VILA

MACHINE OPERATOR

Vanuatu Brewing Ltd invites applications for a young energetic person to fill the above position. The successful applicant should be capable of handling the machine during operation, cleaning and maintaining the machine to ensure that it is always in good working condition.
A practical background and some mechanical experience could be helpful.
Applications should be submitted in writing and accompanied by a curriculum vitae to:-

Silas Willie
Vanuatu Brewing Ltd
P.O. Box 169 Port Vila.

The Vanuatu Commodities Marketing Board requires a Ni-Vanuatu citizen to fill the position of Accountant. Applicants must have a Degree in Accounting and must be prepared to accept responsibility on assumption of duties. Salary will be commensurate with qualification and experience.
Applications with details of accademic qualifications and work experience should be received by 15th February, 1997 addressed to:
The Acting Chief Executive,
Vanuatu Commodities Marketing Board, PO Box 81, PORT VILA.

COPY - TYPIST

* Applicants should have at least 5 years extensive experience in office procedures including word processing.
* The preferred candidate would be fluent in English and must have some knowledge of French.
* The preferred candidate must be ready to work after hours when the need arises.
* Must be able to work independently.
* Must have an attitude to be able to display self competence in carrying out duties.

st have good communication skills.
y is negotiable and will depend entirely on the degree of experience bility of the successful applicant.
cation closed on 29th November 1996.
e apply in writing to :

The Chairman, Staff Commission
Torba Provincial Government, SOLA
Tel: (678) 38550 or Fax: 38550

VACANT POST

NEED A FIRST OR SECOND CLASS ENGINEE
PREFERABLY A MATURE PERSON WITH LOT
EXPERIENCE IN MARINE ENGINEERING.
APPLICATION SHOULD BE SEND TO:
SOUTH PACIFIC CRUISES LTD
P.O. BOX 991 PORT VILA

SELB PACIFIC LIMITED

I nidim urgently one kwalified painter, we i mas kat minimum 3 to 4 years experience.

ACTIVITIES

1. *What is your goal in life?*

   People hold different views about the purpose of their life and work. List the following in order of importance, starting with the most important:
   - *to have a lot of children*
   - *to learn about what goes on in the world*
   - *to earn a high salary*
   - *to learn how to know and love God*
   - *to enjoy yourself and be happy*
   - *to be of service to the community*
   - *to achieve an important position in society*
   - *to have a lot of friends*

2. *Which of these kinds of work are you most interested in doing when you leave school? (You may choose one or more than one)*

Mechanical/Technical:	*working with machines, tools or instruments; finding and repairing faults in machines or instruments.*
Sales:	*buying and selling things*
Clerical:	*working in an office, keeping records, writing reports, etc.*
Administrative:	*planning and organizing activities*
Outdoor:	*working outdoors, at sea or on land*
Numerical:	*work involving numbers or figures - adding, balancing, calculating, etc.*
Artistic:	*drawing, painting, carving, handicraft, designing, writing stories, etc.*
Scientific:	*work involving science - making careful observations, carrying out investigations, etc.*
Social:	*working with people - helping them, dealing with their difficulties, talking to them, explaining things, etc.*
Unskilled:	*work not requiring any qualifications, but making use of manual or physical labour*

3. *Find out the difference between **skills**, **qualifications** and **experience**.*

4. *What job would you most like to have when you eventually finish your education? List 3 choices if possible, with your first choice as no 1. Give reasons for your choices.*

5. *What is **self-employment**? Explain why this way of working interests or does not interest you.*

6. *Study the job advertisements on page 73. Choose any one of the vacancies and make a written application for it, stating clearly why you want to have the job.*

APPENDIX A
GLOSSARY

(Note: the meanings given below are for the words as they are used in this booklet. You may also find other meanings in your dictionary)

antenna	Aerial for receiving radio signals
antibiotics	Biological substances produced by moulds, and used to fight disease-carrying bacteria
arid	Very dry
assassinate	To kill someone violently, without warning
bargain	An agreement that is made after discussion between two sides or people who want different things
battery	Object that can store an electric current
boycott	Refusal to take part in something
bread-winner	Person who earns the money to support the family
bulk carrier	Ship built to carry very large quantities of a particular type of cargo
cause	Thing, event or person that makes something happen
CFC	Chorofluorocarbons
civil rights	Rights of all citizens to receive fair and equal treatment under the laws of a country
coal	Black substance representing the remains of ancient forests; made of carbon
communications	Ways of sending messages, or information, from place to place
computer	Electrically-powered machine that sorts out, stores and finds information, and makes rapid calculations
conflict	Disagreement or fight
contagious	Easily passed on from one person to another
container ship	vessel that carries all its cargo in large metal boxes, all of the same size
convert	Change into something else
deforestation	Cutting down, or removal, of trees
deliberate	Planned beforehand

desertification	Changing into a desert
deterrent	Something that makes you afraid to act
developed nations (or countries)	Wealthy, industrialized countries which have a high standard of living; also known as the "North"
developing nations (**or countries**)	Poorer nations of the world that have started to industrialize; also know as the "Third World" Nations, or the "South"
disarm	Reduce the number of weapons, or arms
division of labour	A way of manufacturing in which the different tasks involved in making one product are *shared* out among a number of workers; each worker does only one task, rather than making the whole product himself
domestic flights	Air links between different parts of the same country
drought	Long period without rain
e-mail	Method of transmitting messages or letters from one computer to another, via telephone
effect	The *result* of doing something, or making a change
efficient	Performing a task well, without wasting time or energy
factory	Workshop or place of work, usually containing machines
famine	Great shortage of food
fax (or facsimile)	Machine that transmits and receives any kind of document via telephone; the document is passed through a fax machine at one place, and a copy is printed out in a similar machine in another place
fertilizer	Chemical or organic substance that is added to the soil in order to make it produce better crops
flexible	Can adapt (change) easily when new situations occur
geothermal energy	Energy contained in sources of boiling water and steam found underneath the ground
global warming	Slow, steady, rise in temperature that is experienced all over the earth
green revolution	Changes in agriculture connected with the breeding of new varieties of plant, and a greater use of irrigation and fertilizers
greenhouse effect	Way in which the earth is warmed through heat from the sun that is trapped by certain gases in the atmosphere (carbon dioxide, methane, water vapour, etc.)

guerilla warefare	Fighting done by small groups of armed men who hide in jungles and rural areas, and often act independently of each other
hydro-electric power (or hydro-power)	Electrical energy made from the power of falling water
illegal	Against the law
immune	Unable to be affected by
immunization	Making someone develop resistance to a disease
impact	Strong effect
industrial revolution	Change in the method of making things - use of machines in factories rather than human labour in a home
industrialization	The growth of factories and industries
information revolution	Change in the way we obtain, handle, store and transmit information, due to the use of computers
innoculation	Injecting a person with virus or disease germs to make him catch a milder form of the disease and so protect himself from future attacks
interdependent	Depending on each other
internet	World-wide connection between computers that enables the rapid exchange of all kinds of information
iron ore	Rock containing the metal iron and other substances
irrigation	Man-made methods of supplying water to the land
machine	An object that supplies its own power to do work
media	Communications that reach everyone - radio, films, video cassettes, television, newspapers, magazines, etc.
micro-hydro project	Small-scale project for obtaining electricity from a river, usually by constructing a low dam just a few metres high
microchip or chip	Tiny square of silicon that holds a complicated electrical circuit
micro-processor	Complicated electrical circuit fixed on to a tiny square, or microchip, of silicon; acts as the central processing unit for a computer
morse code	Way of representing letters of the alphabet by two signs - dots and dashes; used in sending messages by telegraph

natural environment	Things surrounding us that are not made by humans
negotiate	Hold discussions with another person or group with a view to getting an eventual agreement
nuclear fission	Process of splitting up atoms of uranium, or of other heavy metals
overseas carrier	Company that operates aircraft which take passengers between Vanuatu and destinations *outside* the country
photosynthesis	Process in which plants use the energy from sunshine to combine the water and carbon dioxide around them and produce carbohydrates and oxygen
prejudice	A judgement made about someone before meeting him/her, or before he/she has a chance to act
programme	List of instructions for a computer to follow
protest	State publicly that you disagree with something
qualification	Piece of paper stating that a person has passed an examination, or test
rabies	Disease carried by dogs that produces madness and death
racial prejudice	Deciding what someone is like because of his/her skin colour, or ethnic group
radar	Instrument that can sense distant objects and physical features and represent them on a television screen
radio (or wireless)	An instrument which converts sound waves into electrical signals (transmitter) and electrical signals into sound waves (receiver); it sends or receives the electrical signals over long distances through the atmosphere as electro-magnetic waves
radio receiver	An instrument which can receive signals carried by electro-magnetic waves through the atmosphere from a transmitting station, and transform them into sound waves
raw materials	Natural resources or other substances that arrive at a factory to be manufactured into something else
repeater station	Metal tower containing antenna that pass on radio signals from a transmitting station
robot	Automatic machine that does the work of humans
role	The part that a person plays in family life, and the way that he/she behaves towards others in his/her family

saline	Salty; full of salt
satellite	Instrument revolving in space around the earth
satellite television	Television broadcasts that are transmitted via satellite
segregate	Keep separate
self-employment	Working for yourself, or having your own business
semi-arid areas	Places that have only a little rainfall each year
sit-in	To protest by sitting down somewhere and refusing to move
skill	The ability to do something
slave	Person who is the legal property of another, and who must obey him completely
slums	Overcrowded, unsanitary housing
society	Customs and organization of a group of people
software	Instructions to the computer that tell it to carry out certain tasks
solar cell	Object that can generate an electric current from solar radiation (the sun's rays)
solar radiation	Sun's rays, in the form of electro-magnetic energy of different wavelengths - heat, light, x-rays, etc.
steam power	Power obtained from the force of steam (obtained by boiling water)
strike	Refusal to work
technology	The study of machines and tools
telecommunications	Communications over long distances, using cable, telegraph, telephone, ordinary radio or UHF radio
telegraph	Way of sending messages from place to place using electrical signals along wires
telephone	Instrument that can send the sound of a human voice along an electrical cable
teleradio	Telephone that works by means of radio signals and not by cable
television	Instrument that can transmit and receive moving pictures and sound
telex	System of sending printed messages through telephone or telecommunications networks

textile	Cloth woven out of cotton, wool, silk, nylon, etc.
track	Path or route taken through an area
trade union	Organization to represnt the interests of a group of workers
transport	Ways of carrying people and goods from place to place
UHF radio	Radio system using electromagnetic waves of very high frequency and very short wavelength
unity	Existing as one complete whole, composed of many inter-connected parts; agreement or harmony between people, when everyone accepts everyone else and works together
vaccination	Giving a person an altered, weaker form of a serious disease in order to produce a mild sickness that prevents future attacks of the serious disease
values	Things we consider are very important in our lives
video unit (VCR)	Instrument that can record and play films or televisioprogrammes on a cassette tape
woodgas plant	Machine that generates electricity from the hot gases produced by the combustion of wood
word processing	Set of instructions to the computer to enable you to use it like a typewriter and prepare documents
yield	The amount of fruit or seed produced

APPENDIX B
THE PACIFIC GREENHOUSE GAME

Preparations

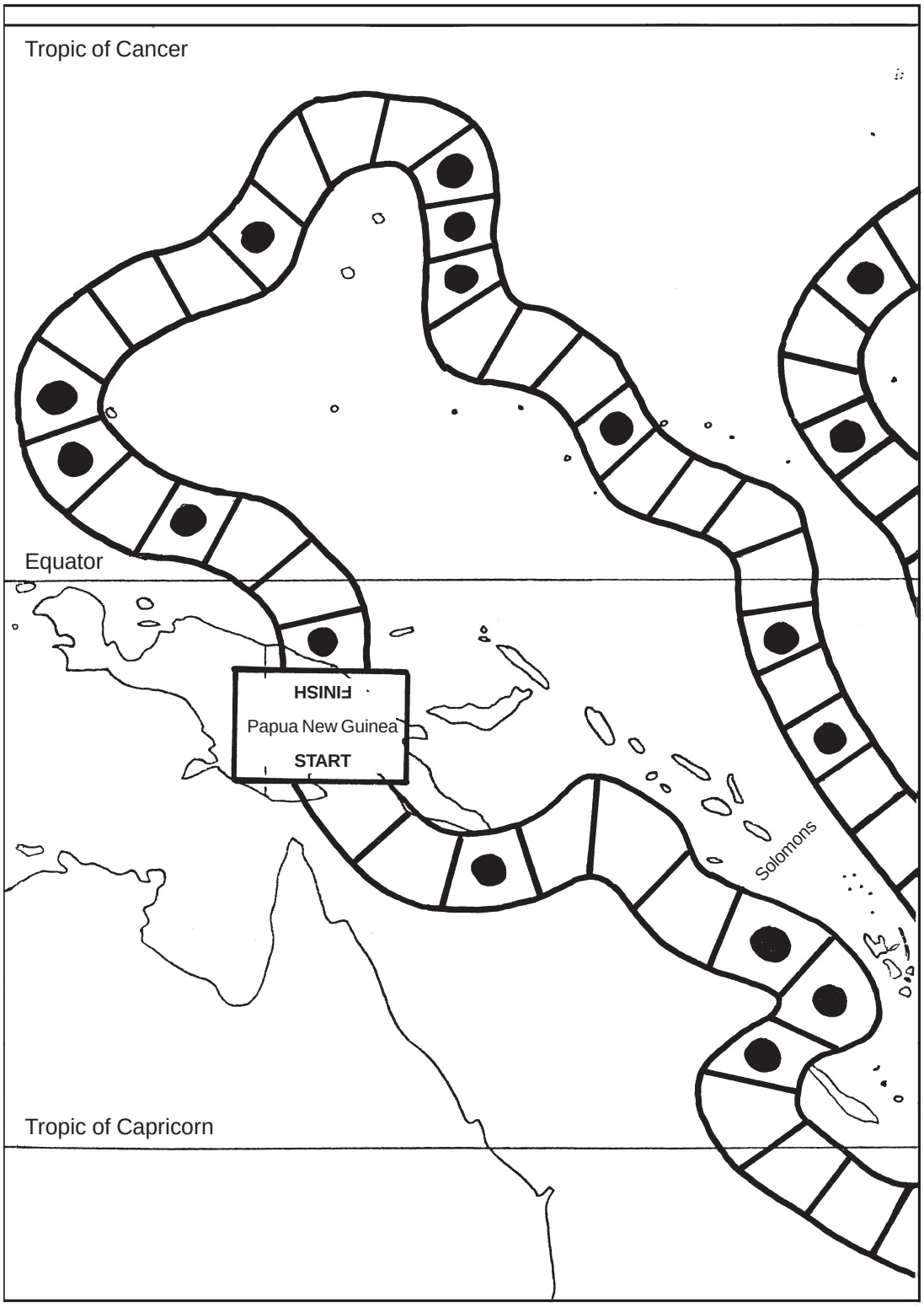
At least 6 sets of the materials needed must be made up. Each set will be for a group of 4 to 5 students. It will contain:

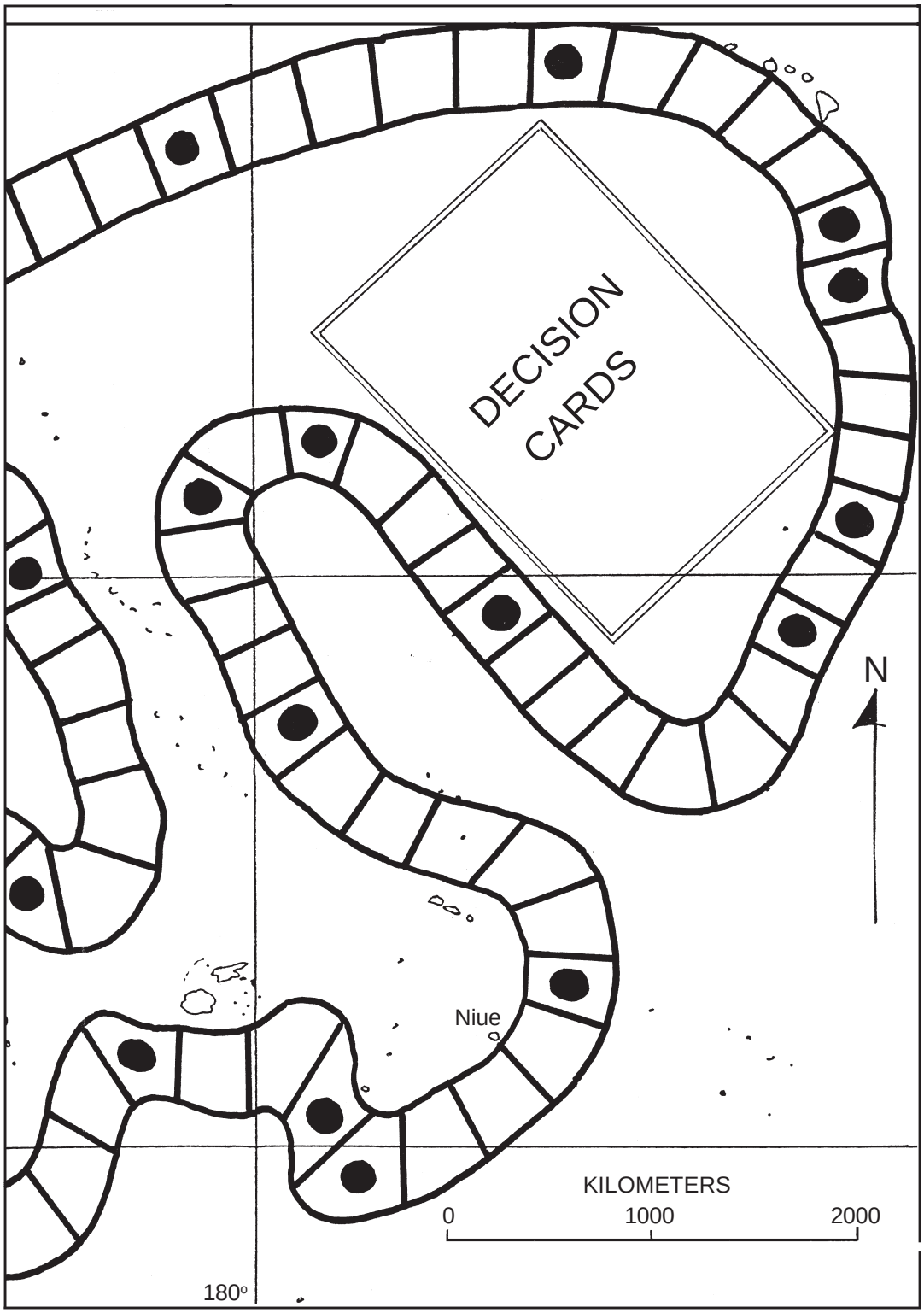
- a base map (pages 84 and 85), mounted on cardboard
- a full set of "Decision Cards" (as given on pages 86 to 89) with each cut out and mounted on card
- two dice
- coloured counters (one each for every member of the group)

Rules

1. Lay out the base board showing the map of the Pacific. Shuffle the "Decision Cards" and place them in a pile face downwards.
2. Each student rolls the dice once, and the person with the highest score will go first.
3. The aim is to get once around the board, starting from P.N.G. and going round in an anticlockwise direction, to finish up at the starting point.
4. Students take it in turns to roll the dice, and to move their coloured counters forward according to the number that comes up.
5. If a student lands on one of the large dots, he/she must take the topmost decision card from the pile, and follow the instructions it contains.
6. The winner of this game is the first person to get back to P.N.G. again. Or, if you want to play to a time limit, the winner is the person who is the closest to the finishing point at the end of this time!
7. To get back to the finishing point, the student must throw the exact number that corresponds to the number of spaces left. For example, if there are two spaces between his counter and the finishing point in P.N.G., then he must throw a "3".

Copy of Base Board and Decision Cards


Tropic of Cancer
Equator
FINISH
Papua New Guinea
START
Solomons
Tropic of Capricorn


DECISION
CARDS
N
Niue
KILOMETERS
0
1000
2000
180°

You are a subsistence farmer.You have found out about climatic change and made a 20-year plan to change your farming methods. MOVE FORWARD 2 SPACES.	You have just chopped down the last tree on your land. GO BACK 6 SPACES.	You have landed on the island of Tarawa, capital of Kiribati. You recommend to the Kiribati Government that it should build a suitable coastal protection system to reduce storm surges and sea level rise. MOVE FORWARD 2 SPACES.
Answer this question, and ask the rest of your group to tell you if you got it right or wrong. Which ocean is the “firebox” that drives atmospheric circulation? IF YOU GOT THE ANSWER RIGHT, MOVE FORWARD 5 SPACES. IF YOU GOT THE ANSWER WRONG, MISS 3 TURNS.	Answer this question, and ask the rest of your group to tell you if you got it right or wrong. Which is the most important greenhouse gas that is contributing to global warming? IF YOU GOT THE ANSWER RIGHT, MOVE FORWARD 3 SPACES. IF YOU GOT THE ANSWER WRONG, GO BACK TO P.N.G. AND START AGAIN!	Answer this question, and ask the rest of your group to tell you if you got it right or wrong. Which of these things will hinder coral growth? Fresh water, ultraviolet light, dynamiting. IF YOU GOT THE ANSWER RIGHT, MOVE FORWARD 2 SPACES. IF YOU GOT THE ANSWER WRONG, GO BACK 2 SPACES.
You live on a coral atoll. The water in the bottom of your babai pit becomes salty, because of sea level rise. GO BACK 3 SPACES.	Your government passes a law restricting the importation of motor vehicles that use petrol (gas). MOVE FORWARD 2 SPACES.	You are a commercial farmer specializing in banana cultivation. Five cyclones in one knock down all your plants. GO BACK 5 SPACES.

You are worried about the number of vehicles on your island. You encourage your community to start a bus company, in order to encourage more people to use public transport. MOVE FORWARD 1 SPACE.	You decide to go out in your canoe into the open ocean on a two-day fishing trip. A tropical cyclone (typhoon) blows you all the way to the island of Niue. WHEREVER YOU ARE ON THE BOARD, MOVE TO NIUE.	Brazil, U.S.A., Canada, Australia and New Zealand agree to reserve land for atoll peoples in danger of losing their land because of a rise in sea level. GO FORWARD 4 SPACES.
Your national parliament passes a law that will terminate all logging activities in your country. MOVE FORWARD 3 SPACES.	Your class organizes a school project in which every student will plant and care for 2 new trees. MOVE FORWARD 5 SPACES.	You believe that the only lasting solution to the problem of global warming is for the nations of the world to co-operate, consult together and pool their technical knowledge. GO FORWARD 10 SPACES.
Your government decides not to do anything about a possible future rise in sea level, because it doesn't believe in it! GO BACK 5 SPACES.	You have actively encouraged the people in your village to support a project that will remove all the mangrove swamp on your coastline. The plan is to establish a large tourist resort. GO BACK 3 SPACES.	You actively encourage those around you to promote unity in the family, in the community and among the various peoples of your nation and the world. You believe that only when the human race is truly unified can it really solve the problems. MOVE FORWARD 10 SPACES.

You understand that what people do to the environment in one part of the world can affect those on the opposite side of the planet. MOVE FORWARD 1 SPACE.	You know that temperatures are going to increase, so you purchase a large oil-burning generator that will keep all the rooms of your house air-conditioned for 24 hours each day. GO BACK 3 SPACES.	You facilitate negoitations between members of your extended family to ensure that every branch of your family has access to both land on the coast and land on the lower slopes of your island. MOVE FORWARD 1 SPACE.
You are totally confused about whether or not global warming is occurring. Some people say it is, and some say it isn't. ASK THE PERSON SITTING TO THE LEFT OF YOU TO DIRECT YOU TO ANYWHERE ON THE BOARD WHERE HE WANTS YOU TO GO!	You open up a shop that specializes in sales of aerosol sprays, since they make a good profit. GO BACK 3 SPACES.	You decide to stop growing yams, taro, bananas and tropical fruit, and you devote all your land to rearing cattle and goats, since they are more profitable. MOVE BACK 6 SPACES.
You are concerned that there might be more cases of malaria in your country if temperatures and humidities rise. You and your school friends go round the village every month in order to help the people get rid of mosquito-breeding sites. MOVE FORWARD 1 SPACE.	In readiness for global warming, you set up major irrigation schemes to bring water to your farmland. GO BACK 2 SPACES.	You are not interested in taking precautions against cyclones (typhoons), since you don't believe that they are going to get more frequent. WHEREVER YOU ARE ON BOARD, GO TO THE SOLOMON ISLANDS.

You live on an atoll in the Marshall Islands. You know that sea level is going to rise, so you and your partner decide to produce as many children as possible, to ensure that some of your family will survive. In all, you have 15 children! GO BACK TO PAPUA NEW GUINEA AND START AGAIN.	You ask your M.P. to put forward a bill in parliament that will permit people from Kiribati and Tuvalu to settle on one of the sparsely populated islands of your country. MOVE FORWARD 3 SPACES.	You take your own weather measurements and keep daily record to get a better understanding of weather and climate. HAVE AN EXTRA TURN.
At a debate on climate change, a speaker claims that melting icebergs will raise the sea level and drown cities. You point out that this is wrong. MOVE FORWARD 2 SPACES.	You form a community action group to establish what may happen in your area with climate change, and what action the community will take to soften the impact. HAVE AN EXTRA TURN.	
	CAN YOU WRITE YOUR OWN?	