

APPENDIX I

The reading passage of "Bahasa Inggris 2^a" by DEPDIKBUD of the second year SMA students, book II, semester III, Program Studi Ilmu-ilmu Fisik dan Ilmu-ilmu Biologi.

Unit 1

THE CAMPAIGN FOR FOREST CONSERVATION

Scientists, environmentalists and government planners know about the importance of tropical forests, but the average person is generally unaware of the serious implications of forest destruction. Tropical forests are the oldest and most diverse ecosystem on earth: they regulate the climate, ensure a constant supply of fresh water to lowland farms, and provide us with food, fuel, fibres, building materials and medicines. They are an important source of food in parts of the world where rapidly increasing populations are putting pressure on slim resources.

The forest is also important ecologically. Destroying it will result in soil erosion, landslides and degradation of valuable farmland. It will reduce productivity of river fisheries.

In addition, the genetic security of many crops depends on the survival of the forest. Tropical forests provide rubber, cocoa, numerous pharmaceuticals, dyes and tanning agents. They also supply oils used in floor polishes and cosmetics; spices such as chili and vanilla, and useful materials such as rattan, cane and bamboo. Tropical forests contain about half of the world's estimated ten million species of plants, yet less than one per cent have been studied for their possible benefits to mankind.

For all those reasons, the State Minister of Development, Supervision and Environment has consistently been trying to halt the process of erosion in Indonesia. Through the medium of television he keeps on asking our people to stop destroying trees and forests. He says that the excessive felling of trees and the reckless opening up of tropical rain forests will only speed up the destruction of the entire country.

(Adapted from the "Indonesian Observer" 9th October, 1982)

New Vocabularies

campaign	= kampanye
conservation	= pelestarian
environmentalist	= ahli lingkungan hidup
planner	= perencana
average	= rata-rata
to be aware/ unaware of	= menyadari/ tak menyadari
implication	= hal yang tersimpul
destruction	= penghancuran
diverse	= bermacam-macam
ecosystem	= ekosistem
to ensure	= menjamin
fibre	= serat
degradation	= kemerosotan
to put pressure on	= mengadakan tekanan terhadap
slim resources	= sumber yang tak memadai
genetic	= hal yang berhubungan dengan keturunan
security	= keamanan
numerous	= banyak
pharmaceuticals	= obat-obatan
dyes	= bahan pewarna
tanning agent	= zat penyamak
chili	= lombok
estimated	= diperkirakan
spices	= bumbu-bumbu
mankind	= umat manusia
consistently	= terus-menerus
to halt	= menghentikan
excessive	= terlalu banyak
felling	= penebangan
reckless	= sembrono
opening up	= pembukaan
landslide	= tanah longsor
productivity	= daya produksi
to speed up	= mempercepat

Pertanyaan Bacaan

1. What kind of campaign is Indonesia conducting nowadays?
2. What are the benefits to mankind of our tropical forests?
3. What kinds of crops do tropical forests give us?
4. Why is it important ecologically to conserve tropical forests?
5. Destroying the forests will reduce productivity of river fisheries. Why?

6. How many species of plants in tropical forests have not been studied up to now?
7. Why has the Minister for Development, Supervision and Environment been trying to halt the process of erosion in Indonesia?
8. In what way can the reckless opening up of tropical rain forests speed up the destruction of the country?

Analysis

1. Comprehension
2. Comprehension
3. Comprehension
4. Analysis
5. Analysis
6. Application
7. Analysis
8. Analysis

Unit 2

THE SEASONS

Indonesia lies on the equator, so it is in the tropics. The word tropic means "turning point". The earth is tilted on its axis and rotates around the sun, so each year the sun, so each year the sun appears to travel from north to south. On 22nd March the midday sun is directly overhead at places on the equator.

After that, it is overhead each day at places whose latitudes are farther north, until by 21st June it is overhead at places on the tropic of Cancer. Then the reverse happens. On 22nd September the midday sun is again overhead at places on the equator. On 21st December the midday sun reaches the tropic of Capricorn. Then it changes direction again and starts to move north.

Indonesia's position on the equator gives it a tropical climate. This means it has much rainfall and a high temperature. Indonesia is in the path of the monsoon, and it has two seasons wet and dry. From April to October the wind blows from the south-west, and it is the dry season. From November to March the monsoon blows from the north-east, across the Pacific Ocean, and it is the wet season. However, the mountains on many of the islands cause the seasons to be reversed.

Countries farther north than the tropic of Cancer, or farther south than the tropic of Capricorn, have four seasons: summer, autumn, winter and spring. In these countries the temperature differs greatly from season to season.

The weather is hottest in summer. Then it is most like our dry season. There are long hours of daylight and in summer fruit and vegetables ripen.

Following the hot summer days comes autumn, or 'fall' as it is called in the United States of America. Fruit and vegetables are harvested, and the days are cooler and shorter. The leaves on the trees change from green to yellow, red and brown, and then fall off.

Then comes winter. Daylight hours are short; it is cold and windy. In many countries thick, white snow covers the ground. People wear thick clothes to keep themselves warm, and heat their buildings with fires and stoves.

Winter changes to spring. The days begin to lengthen and it becomes warmer. Flowers start to bloom, and young leaves begin to grow on the branches of the trees. There are often showers of rain during this season which help the plants to grow. Nature is now ready for the next season, summer.

New Vocabularies

bitter (adj)	= pahit
bitterness (n)	= kegetiran
sudden (adj)	= tiba-tiba
suddenness (n)	= kemendadakan
conscious (adj)	= sadar
consciousness (n)	= kesadaran
uneasy (adj)	= gelisah, kuatir
uneasiness (n)	= kegelisahan
memorize (v)	= menghafalkan
ancestors (n)	= nenek moyang
heritage (n)	= warisan

Pertanyaan Bacaan

1. Does the sun remain overhead at the same places on the equator?
2. In countries that have four seasons, which one is most like our own dry season?
3. Does the monsoon have any influence on the seasons?
4. What countries have four seasons?
5. In what season are the trees bare in England?
6. Which is the hottest season in New Zealand?
7. In what season are the crops harvested in Europe?
8. Where do you find snow in Indonesia?

Analysis

1. Comprehension
2. Application
4. Comprehension
5. Comprehension
6. Application
7. Comprehension
8. Comprehension

Unit 3

MARINE LIFE

The word "marine" comes from the Latin word "mare" which means "sea". Marine life means all the animal and plant species that live in the waters of the sea.

The geography of the seabed, the floor of the sea, is not so different from that of the land. There are hills, high mountains, valleys, rolling plains and plateaus. Below the low tide mark, the bottom of the sea slopes gently downwards to a depth of about 100 fathoms, in the form of a shelf known as the continental shelf.

On the surface of the sea there are tiny floating plants and animals, including the eggs and young of larger animals and jelly fishes, that are called "plankton". The plankton is important because a great many fishes feed on it.

Several kinds of animals such as crabs, lobsters, shrimps, squids, octopuses, molluscs (shellfish of all kinds), anemones and sponges live on the seashore. Such animals can also be found on the continental shelf, but the animals live in the deeper waters are usually larger.

Seaweeds live in the shallow waters, no deeper than 50 fathoms as they need fairly strong sunlight to assimilate their food. In China and Japan seaweeds are eaten; in Europe carrageen is used for thickening soup and making jellies.

The really deep sea is cold and dark because the sunlight can not penetrate the depths. The pressure in the deep sea is higher than in the shallow water, and the fishes are much more fragile and delicate in appearance than those from parts of the sea where the pressure is lower. Some have large eyes and can see, but others are completely blind.

We should look on the sea as a valuable source of food. Fishing industries should know the locations of the fish they are trying to catch, and how many can be caught without killing off the whole species.

(Adapted from The Childrens' Encyclopaedia Britannica)

New Vocabularies

seabed	= dasar laut
rolling plains	= tanah landai yang naik turun (bergelombang)
seaweed	= ganggang laut
plateau	= dataran tinggi

tide mark	= batas air pasang
fathom	= 1.828 m (ukuran kedalaman air)
assimilate	= mengasimilasikan
carrageen	= nama sejenis ganggang laut yang berwarna merah
penetrate	= menembus
fragile	= rapuh, mudah patah
location	= tempat

Pertanyaan Bacaan

1. What does the word "marine" mean in English?
2. Are there any mountains and valleys on the seabed?
3. What eats the plankton?
4. In which parts of the sea do shrimps and lobsters live?
5. Do seaweeds grow in the really deep sea?
6. Who likes to eat seaweed?
7. Why is it dark and cold in the really deep sea?
8. Why do people research marine life?

Analysis

1. Comprehension
2. Comprehension
3. Comprehension
4. Comprehension
5. Comprehension
6. Comprehension
7. Analysis
8. Analysis



Unit 4

GRAVITY

A force of attraction exists between every body in the universe. It is called gravity and it has been investigated by many scientists including Galileo and Newton. Gravitational force depends on the masses of the bodies. If a body is a planet, like the earth, the force is considerable. Everything on or near the surface of the earth is attracted by the mass of the earth. The greater the mass the greater is the earth's force of attraction on it.

Because of gravity, bodies have weight. We can perceive weight only when a body resists gravity. For example, when we pick up a stone there are two forces involved. One is the lifting force we exert, and the other is the force of gravity which attracts the stone downwards and thus gives it weight. When a body escapes from the influence of the earth's gravitational pull, it can become 'weightless'. For example, the centrifugal force of a spacecraft spinning in orbit round the earth cancels the effect of gravity. The crew therefore experience weightlessness. One of the minor disadvantages of weightlessness is that normal pens will not write, because the ink is not attracted by gravity to flow out of the pen.

If the space crew land on the surface of the moon, they experience the much weaker force of gravity exerted by the moon. On the moon they weigh less than on earth. Special training is necessary to help them to walk on the moon's surface.

To simplify engineering calculations, it is assumed that gravity is the same everywhere on the earth's surface, and that every kilogram of mass the earth exerts a force of 9.81 Newtons on a body. In fact gravity differs slightly from place to place because of the shape of the earth. It is greatest at the poles where the earth is flattest, and is least at the equator.

(Adapted from English in Mechanical Engineering, by Eric H. Glendinning)

New Vocabularies

force of attraction	= daya tarik
universe	= alam semesta
gravitational force	= daya tarik bumi
involved	= terdapat, terlibat

considerable	= besar sekali
perceive	= merasakan, melihat
exert	= menggunakan
centrifugal	= gaya melanting

Pertanyaan Bacaan

1. How do we know that a force of attraction exists in the universe?
2. Do the masses of the bodies decide the force of gravitation?
3. Does the earth exert a weak or a strong force of gravitation?
4. Is there any correlation between weight and gravity? In what sense?
5. What forces are involved when we lift up a stone?
6. Why is a body weightless in outer space?
7. Is the force of gravitation on the moon less than on earth?
8. Does gravity differ from place to place?

Analysis

1. Synthesis
2. Comprehension
3. Comprehension
4. Comprehension
5. Comprehension
6. Analysis
7. Comprehension
8. Comprehension

Unit 5

MALAYSIA

The Federation of Malaysia was proclaimed on 16th September 1963. It consisted of the eleven states of the Federation of Malaya, plus the states of Sabah, Serawak, and Singapore.

Singapore became an independent republic on 9th August 1965. The eleven states of the Federation of Malaya are called West Malaysia, and the states of Sabah and Serawak are called East Malaysia.

Much of the history of West Malaysia is based on the tin industry. In 1830, Sultan Mohammad of Perak tried to mine the Kinta area for tin. He was not successful. His nephew, Rajah Jum'at, who had grown rich from mining tin in another area, tried the the area along the Klang river. He found much tin near a place which is now called Ampang. Had his men not been killed by malaria he would have recovered a large amount of tin. However, did not give up easily. He gathered another 150 men and tried again. Very soon a great deal of tin began to come down the river by boat, and the quantities increased rapidly. This was the start of the development of modern Malaysia, and a city now called Kuala Lumpur began to grow.

West Malaysia is said to have been founded on tin and built on rubber. The first rubber trees were introduced in 1876. Had the pioneers not worked hard, rubber would not play the important role that it does today in the country's economy. Of the pioneers of rubber, Malaysia will always remember Henry Nicholas Ridley, the first director of the Botanical Gardens in West Malaysia. He died in 1956 at the age of one hundred! Were he still alive he could have told us much about the first years of the history of rubber plantations in Malaysia.

New Vocabularies

tin	= timah
mine	= menambang, tambang
successful	= berhasil
give up	= menyerah
development	= perkembangan
found	= mendirikan
pioneer	= pelopor, perintis
plantation	= perkebunan

Pertanyaan Bacaan

1. It what year was the Federation of Malaysia Proclaimed?
2. How many states were there in Malaysia before 9th August 1965
3. Why did Rajah Jum'at fail to recover much tin from along Klang river at first?
4. What does the writer say which shows that tin rubber have been very important in the development of West Malaysia?
5. Why will Henry Nucholas Ridley always be remembered in Malaysia?

Analysis

1. Comprehension
2. Application
3. Analysis
4. Comprehension
5. Analysis

Unit 6

HYDROPONICS: FARMING WITHOUT SOIL

Hydroponics is an unconventional growing technique. It is the cultivation of plants in water. The idea of hydroponics comes from the assumption that plants do not need soil as such. They need only the nutrients and moisture in the soil, and these can be supplied through gravel beds that contain water.

Hydroponics is not a new process. As long ago as 1690, an English physician tried growing plants in water in a laboratory experiment. In 1800 some German researchers used the method to develop many of the formulas for plant nutrient solutions which are still in use today. About a generation ago, hydroponics moved out of the research laboratory into commercial use. In 1936 a Californian physiologist, W. F. Grick, published guidelines for hydroponic agriculture.

One of the leading companies in the field of hydroponics is Hydroponics Incorporated of Glendale, Arizona. It operates about 200 greenhouses on a 48 hectare site. It produces more than 2.7 million kilograms of fruit and vegetables each year mostly tomatoes, but also cucumbers, lettuces and melons. Crop yields are excellent: for example each mature tomato plant produces an average of 12.1 kilos of fruit in a year of two growing cycles. This compares with about 9 kilos for two crops of the average soil-grown plant.

Everything is carefully controlled in the greenhouses: the temperature, the humidity, and the air circulation. Wind, hail, frost, drought, weeds and insects are all excluded.

In recent years, hydroponic farming has been expanding in many parts of the world. A hydroponic farm operated by the government of Kuwait produces fresh tomatoes at a desert site near the capital city. At Puerto Penasco, Mexico, and on Sadiyat Island in Abu Dhabi, experimental hydroponic farms use seawater that is desalinated by special installations located on the coast.

(Adapted from Science and Technology in
Everyday Life, by Dean Curry)

New Vocabularies

unconventional	= tidak menurut yang biasa
cultivation	= penanaman (tanah, tumbuh-tumbuhan); pemeliharaan
assumption	= pengiraan, perkiraan
nutrient	= zat makanan
moisture	= uap lembab; kadar air
solution	= larutan
guideline	= pedoman
physiologist	= ahli faal
site	= tanah
greenhouse	= rumah kaca untuk tanaman
melon	= semangka
crop yield	= hasil panen
mature	= dewasa
growing cycle	= siklus bertanam
soil-grown	= yang tumbuh di tanah
humidity	= Kelembaban
entry	= jalan/ maju
hail	= hujan es
frost	= embun beku.
desalinated	= menghilangkan zat garam dari air laut.

Pertanyaan Bacaan

1. What is hydroponics?
2. What do plants basically need?
3. Who started hydroponics in 1690
4. Who published a guideline for hydroponic agriculture?
5. Which produces more: a hydroponic tomato-plant or a soil grown tomato-plant?
6. What are carefully controlled in greenhouses?
7. Mention some countries which have practised hydroponic farming.
8. Do you think it is necessary for Indonesia farmers to start hydroponic farming? Give your reasons.

Analysis

1. Comprehension
2. Comprehension
3. Comprehension
4. Comprehension
5. Application
6. Comprehension
7. Comprehension
8. Analysis

Unit 7

THE POPULATION EXPLOSION

Research has predicted that the world's population will probably increase by 2,754 million over the next 30 years, that is by 76 per cent. The poorer nations will contribute 2,384 million (87 per cent) to this increase; the richer nations 370 million (13 per cent). The population explosion is caused by a dramatic decline in the mortality rate, brought about by advances in medical science, the continuing campaign against communicable diseases, and a high or above average birthrate, which is not falling.

Population growth can also be caused by immigration. People may leave their own country for political, economic or cultural reasons, to settle in another country. However, today almost all countries in the world have very well-defined and strictly enforced immigration policies which severely restrict the numbers of immigrants admitted.

To live decently, people need food, clothing, housing, health and educational facilities, as well as employment and recreation. The governments of all developing countries, like Indonesia, India, and the Philippines, are fighting hard to provide their growing populations with these necessities. Yet millions and millions of babies and young people have to be fed, clothed, housed and taken care of, and their numbers are increasing rapidly.

Although the production of food, clothing and housing is expanding, it cannot keep pace with the growth of population. The pressure of all these millions of people on the world's resources has created many problems in the political, economic and social spheres. Over-population affects a great deal more than the availability of food. The population explosion in the developing countries has already created cities which are so big and over-crowded that living in them has become increasingly difficult and even dangerous.

New Vocabularies

rapid	= cepat
growth	= pertumbuhan
estimate	= menaksir, memperkirakan
inhabitant	= penduduk
decline in the mortality rate	= penurunan angka kematian
advance	= kemajuan

communicable	= menular
fertility	= kesuburan
settle	= bermukim
admit	= menerima
necessity	= kebutuhan
provide	= menyediakan, memberikan
feed	= memberi makan
keep pace with	= berjalan sejajar, mengikuti
resources	= sumber
sphere	= bidang
affect	= mempengaruhi
availability	= tersedianya.

Pertanyaan Bacaan

1. Which nations will contribute most to the population explosion?
2. What is the effect of advances in medical science on the growth of the population?
3. What do people need in order to live decently?
4. Are developing countries successful in fighting to provide for the needs of their population?
5. Is living in the cities nowadays enjoyable?
Give reasons for your answer.

Analysis

1. Comprehension
2. Comprehension
3. Comprehension
4. Comprehension
5. Analysis

Unit 8

TURBINES

The main difference between the turbine and other types of engine is that its only movement is rotary, or turning. Its name comes from the Latin turbo, meaning "something that spins or twirls"

Turbines can be driven by steam, water, gas or air. A steam turbine consists of a cylinder-shaped casing containing a drum shaped rotor, or turning part. Steam from the boiler is led through nozzles fixed to the casing so that jets of steam strike blades which are mounted in a ring round the rotor.

Water turbines are used for driving generators in hydro-electric power stations. There are two types, impulse turbines and reaction turbines. Both make use of the energy of falling water which increases in velocity as it falls under the influence of gravity. The distance of fall, or "head", corresponds to steam pressure. A high head or steam pressure results in high water or steam velocity.

Gas turbines work on the same principle as steam or water turbines, but are driven by hot gas which is produced by burning liquid fuel such as paraffin (kerosine), heavier oils, or gas in air. The gas is compressed by a rotary compressor, heated by burning the fuel, and blown into the gas turbine. Developed originally to drive aircraft, their outputs and sizes have been increased tremendously. They are now used widely for ship propulsion and in power stations.

Tiny air turbines, driven by compressed air and turning at 250,000 r.p.m., are used for dentists' drills. At this speed the drilling of a tooth is quickly completed and there is less vibration than with an electric drill.

New Vocabularies

turbine	= turbin, roda yang berputar
rotary	= berputar
casing	= selubung
nozzle	= mulut pipa
jet	= pancaran, semburan
velocity	= kecepatan
gravity	= daya tarik
liquid	= cairan
tremendously	= dengan hebatnya
vibration	= getaran

Pertanyaan Bacaan

1. What does the word turbo mean?
2. Do engines in general rotate like the turbine when they move?
3. Since turbines can be driven by means of substances other than oil, do you agree that they are economical devices?
4. What substances can be used to make turbines spin?
5. What decides the velocity of the falling water?
6. Is the same principle used to work the gas turbine as other turbines?
7. Can turbines be used for planes?
8. What is the smallest turbine you know of?
9. What do both the impulse turbines and reaction turbines use?
10. What power is meant in the phrase "power station" in the fourth paragraph?

Analysis

1. Comprehension
2. Comprehension
3. Evaluation
4. Comprehension
5. Comprehension
6. Comprehension
7. Comprehension
8. Comprehension
9. Comprehension
10. Comprehension

Unit 9

ADOLESCENCE AND SOCIAL DEVELOPMENT

During the pre-adolescent and adolescent years a young person experiences a general shift in interest and involvement away from family. This does not necessarily take place gradually and peacefully. Boys and girls very commonly have misgivings about the changes taking place in their interests, and may experience conflicting feelings. On the one hand, they may enjoy some aspects of their dependent relationship with their parents; but on the other hand they may also find their associations with their peers satisfying.

The peers usually win, partly because they offer greater opportunities for esteem and status. At home a teenager has a subordinate status; his friends are much more willing to accord him a position of equality.

Parents, too, often complicate the problem. As they realize that their relationship with their children is beginning to change, that their children are becoming more distant in their manner, more rebellious, less responsive and less involved in the life of the family, they may feel threatened. Parents see children as psychological extensions of themselves, and allowing children to slip away into the outside world is like losing a part of themselves. Parents are reluctant to face such a loss.

For his part, the teenager may at times feel the need for parental love and direction, but he is often too proud to admit or accept such feelings. He considers any form of dependence a sign of weakness. To solve this conflict some adolescents make decisions that are not in their best interests, and defend them stubbornly and rebelliously in the face of their parents' opposition.

New Vocabularies

adolescence (n)	= massa remaja
adolescent (adj)	= sifat remaja
adolescent (n)	= anak remaja
shift (n)	= pergeseran
misgiving	= rasa was-was
peer (n)	= kawan sebaya
esteem (n)	= martabat
accord (v)	= mengizinkan, menyetujui
rebellious (adj)	= sifat memberontak
involved (adj)	= terlibat
responsive (adj)	= tanggap
threatened (adj)	= terancam

reluctant (adj)	= enggan .
stubbornly (adj)	= dengan keras kepala
resolve (v)	= mangakhiri, mengatasi me- mecahkan masalah

Pertanyaan Bacaan

1. What is the reason for the shift in interest and involvement from the family to groups outside the family?
2. Why do adolescents have a hard time?
3. Why do teenagers usually prefer playing with their friends to staying at home with their parents?
4. Mention some characteristics of adolescents.
5. How do parents often complicate the problem?
6. What is meant by "the outside world" in this passage?
7. How do parents see their children?
8. Why don't adolescents accept their feeling of need for their parents' love and direction?

Analysis

1. Analysis
2. Analysis
3. Analysis
4. Comprehension
5. Synthesis
6. Comprehension
7. Synthesis
8. Analysis

Unit 10

ELECTRICITY

In order to talk about electricity, it is necessary first to talk about the atom. The idea of the "atom" has a long history, extending back to about 600 B.C., to the time of the ancient Greeks. They believed that all matter was made of atoms. The word "atom" in fact comes from the Greek word "atomos", which means "indivisible". It was not until 1987 that it was discovered that the atom is not indivisible but is composed of even smaller particles. Among these particles there is one called the electron.

Electrons orbit around the centre or nucleus of the atom, much as the planets in the solar system orbit around the sun. Electrons closer to the nucleus are held more tightly than those in the outer orbits. It is the electrons in the outermost orbit of certain kinds of atoms that can be made to flow as electric current.

Electrons flow easily through certain kinds of materials called "conductors. Many metals, such as silver, copper, gold, and aluminium, are good conductors. Good conductors are used in electric circuits to provide a path for the current.

Other substances provide strong resistance to the flow of the current. These substances are called "insulators", and are used to confine a current to the desired path. Substances such as hard rubber, glass, wax, and certain kinds of plastic are good insulators. Thus, the cord on an electric appliance consists of a piece of wire, generally copper, surrounded by a type of plastic such as vinyl, which is the insulator confining the current to its path.

(from Short Reading in Science English
Teaching Div. I.C.A. Agency, Washington, 1973)

New Vocabularies

extend back to	= membawa (kita) kembali ke
ancient	= kuno
indivisible	= tidak dapat dibagi
is composed of	= terdiri dari
outermost	= yang paling luar
path	= jalur
confine	= membatasi
appliance	= peralatan

Pertanyaan Bacaan

1. When was the electron discovered?
2. Which particle is smaller: the atom or the electron?
3. Why do electrons flow easily through copper, silver, and gold?
4. Mention some good insulators? Why are they good?
5. Which electrons can be made to flow as electric current?
6. What is a conductor used for?
7. What is an insulator used for?
8. What is needed to make a cord for the refrigerator?

Analysis

1. Comprehension
2. Comprehension
3. Analysis
4. Comprehension and analysis
5. Application
6. Comprehension
7. Comprehension
8. Evaluation

Unit 11

GAS FOR FUEL AND LIGHT

The air we breathe contains the gases oxygen and nitrogen, and small quantities of other gases. Every gas consists of molecules of a particular substance, moving rapidly about. The molecules are comparatively far apart, but they fill evenly any vessel containing them. All gases can be changed to liquids, and some even to solids, if they are cooled down enough. The oxygen used in factories for making a very hot flame to cut and weld steel is sometimes stored and carried about in the liquid state, and solid carbon dioxide, usually called dry ice, is used for keeping ice-cream cold.

The kinds of gases used in cookers and gas fires come from three sources. The first kind is made of naphtha, which is a light oil; the second is made from coal; while the third, natural gas, is almost entirely methane.

Geologists believe that natural gas was from carboniferous, or coal-bearing rocks. The gas rose into the sandstone, and was prevented from escaping upwards out of the sandstone by a "cap" rock—usually a form of rock salt—which formed a dome over the natural reservoir of gas.

In Jakarta and other big cities in Indonesia it is common practice to use gas for cooking. Gas reaches the houses through large underground pipes called gas mains; and smaller pipes called service pipes lead to the gas meters in each house or building. The meter records how much gas is used.

Natural gas and gas from oil has no distinctive smell, so an artificial smell is produced by adding small quantities of concentrated odorants, to enable people to detect any leak that may occur.

Pertamina sells bottled gas under the name of "Elpiji". The gas is put in steel drums or cylinders. Bottled gas is used by people who live in places without a piped supply, by yachtsmen and campers. Indonesia's role in LNG production started in 1977 with the initiation of the LNG facility at Bontang. About a year later the plant at Arun also started production and exportation.

New Vocabulary

fuel	= bahan bakar
vessel	= tempat (bejana)
welding	= penyambungan dengan las

state	= keadaan
entirely	= seluruhnya
coal-bearing	= mengandung batu bara
rock salt	= gumparan gram tambang
dome	= kubah
reservoir	= tempat persediaan
distinctive	= jelas
odorant	= zat pemberi bau
to record	= mencatat, merekam
leake	= kebocoran

Pertanyaan Bacaan

1. What does the air contain?
2. When does gas become liquid?
3. What is dry ice? What is the use of dry ice?
4. What are the three kinds of gas used for cooking?
5. Why is it dangerous to use gas without a distinct smell?
6. Which kind of natural gas do you think is used by people that cook on a boat?
7. Mention several places in Indonesia that produce natural gas.

Analysis

1. Comprehension
2. Comprehension
3. Comprehension
4. Comprehension
5. Analysis
6. Application
7. Comprehension

Unit 12

THE INDONESIAN PEOPLE'S WAY OF LIFE

The Republic of Indonesia is the largest nation in South Asia and rich in natural resources. With a population that may be as high as 160.000.000, Indonesia ranks among the six most populous nations of the world. Indonesia is situated between the Pacific and Indian oceans. The Indonesian population is a mixture of different ethnic groups. From island to island-and even within each island different customs are observed.

Indonesia is an exotic land. On its islands are found lush tropical forests, wild jungle and active volcanoes.

The motto, "One country, one nation and one language" adopted by the nationalist movement at the Youth Congress of 1928 is a striking illustration of the close relationship of the cultural and political development of Indonesia. Although the regional languages are still used among people of the same linguistic area, the Indonesian language has been rapidly adopted throughout the Indonesian islands.

"Gotong royong" or mutual assistance is one of the important principles of the Indonesian way of life. Gotong royong, in which all the members assist each other in rice planting, harvesting, wedding ceremonies, constructing houses and other activities, is done throughout Indonesia. When a democratic gathering is held, all members have the right and duty to participate in deliberations of common interest. Respect and equal rights for women have an important role in the Indonesian way of life.

One outstanding custom of the Indonesian, wherever they are, is their hospitality. A stranger is always welcome, and will be treated as an honourable guest. Neighbours live within a kind of family relationship. Whenever help is needed, no one hesitates to give a hand.

The tolerance of the Indonesian people has been proved through long centuries of experiences. Many beliefs and ways of life penetrated through Indonesia, and all have been blended harmoniously in accordance with the local environment. Consequently, the religious pattern of Indonesia reveals this remarkable spirit of tolerance, with the right of freedom of each religion.

(Adapted from: Atlas of Indonesia;
Volume III Custom and Culture)

New Vocabularies

ethnic group	= suku bangsa
regional language	= bahasa daerah
natural resources	= sumber alam
lush	= lebat
hesitate	= ragu-ragu, bimbang
to give a hand	= mengulurkan tangan, membantu
penetrate	= memasuki, menyusup
blend	= membaur
reveal	= mengungkapkan menyatakan
remarkable	= luar biasa, hebat.

Pertanyaan Bacaan

1. What is Indonesia rich in?
2. What can be found in our tropical forests?
3. What makes the cultural and political development become close to each other?
4. In what way is "Gotong royong" done by the people of Indonesia?
5. Why is "Musyawarah" considered as a democratic gathering?
6. How is the status of women in the Indonesian way of life?
7. How is the tolerance of the Indonesian people proved in their beliefs?

Analysis

1. Comprehension
2. Comprehension
3. Comprehension
4. Comprehension
5. Analysis
6. Synthesis
7. Synthesis

Unit 13

LIBRARIES

Libraries have always served three main purposes. They collect records of what people have thought and done. They preserve those records, and they make them available to you and me.

When we give ourselves a chance to find out what libraries offer us, we open the door to a world of wonders. In the library, we can entertain ourselves, learn on our own, and be inspired by ideas that otherwise we might never have dreamed of.

Some libraries have a separate department for young adults, especially those in their teens. Others have a staff that is especially trained to serve young people, within the adult department. Whatever the arrangement, the object is to bring good books, information services, and entertainment to young people is

Some of the books in the collection for young adults are written especially for teenagers. However, most of the books are selected by the libraries from general adult books. The librarian chooses books and magazines on science, sports, humour, adventure, personal problems and other subjects. Often a group of young people helps the librarian make these choices. Career information is an important part of the young adult collection. There are often large numbers of pamphlets about job opportunities and careers. College prospectuses and technical school are also available.

Many children enjoy reading clubs. boys and girls who have a common interest such as dramatics, poetry, or stamp collecting appreciate clubs especially. Librarians help each group organize its club. They guide the members in using the books and other material that will be most helpful. To encourage reading during the holidays, many libraries have vacation reading clubs.

Knowing how to locate books and information in a library is a valuable skill. The librarian teaches children how to use the catalogue that tells what is in the library, and how to find books and other material. Older children are introduced to encyclopaedias, almanacs, and other reference works that give information often needed for schoolwork.

New Vocabularies

preserve	= memelihara
available	= tersedia
entertain	= menghibur

prospectus	= prospektus, bahan selebaran
inspire	= mengilhami
a common interest	= keinginan yang sama
appreciate	= menghargai, menyenangkan

Pertanyaan Bacaan

1. What are the three main purpose of libraries?
2. When we go into a library, what can we do?
3. Why do libraries have staff for young people?
4. Are most of the books in the collection for young adults written especially for teenagers?
5. What is the important work of the young adults' collection?
6. What are some of the duties of a librarian?
7. What is the aim of libraries that have vacation reading clubs?
8. What is the use of a library catalogue?
9. Can everyone make use of libraries?
10. What knowledge can we get in a library?

Analysis

1. Comprehension
2. Comprehension
3. Analysis
4. Comprehension
5. Comprehension
6. Comprehension
7. Comprehension
8. Comprehension
9. Comprehension
10. Comprehension

Unit 14

POPULATION AND RESOURCES:
THE WHOLE WORLD'S PROBLEM

Our earth is like a giant spaceship circling around the sun. The three and a half billion people now alive are its passengers. Our spaceship earth cannot grow in size. There is a limited amount of air for all of us to breathe. If we spoil our air there is no way of getting more. There is also a limited amount of water. We cannot live without water. We have to use our water supply very carefully.

Our spaceship earth has been circling the sun for billions of years and its surface has undergone many changes. Life on earth had a simple beginning, about two billion years ago. Countless tiny organisms slowly evolved, then larger plants, and later a richly varied kingdom of animals. Most of the early species of plants and animals became extinct. Eventually man appeared. He didn't have an easy life. Famine, disease, harsh climates and war were his constant enemies. Yet he survived. Through the years he learned to control part of his surroundings: he could harness nature to some extent. He learned to prevent and cure diseases. He found ways of keeping people alive much longer than before. His numbers have vastly increased, so much so that today overpopulation is a big problem. There are too many people for too little food. Today, half of the people in the world are malnourished. Thousands of people die of starvation every week.

Too many people mean that pure water is becoming scarce in many areas. Without water we cannot live or grow crops, or continue most of our manufacturing. Yet many people treat water as if it were free and in endless supply. We have wasted lots and lost of water, and we have been very careless in allowing the rivers and lakes, which supply us with sewage, rubbish and waste from our factories.

Too many people mean too little land, for the growth in population means that we will need more and more good soil to produce food. We are very careless with the good soil to now, for we allow it to be badly polluted or be or to be washed away by erosion. More people need land, not only for growing food, but to build their homes and schools on.

New Vocabularies

spaceship	= kendaraan angkasa
evolve	= berubah sedikit demi sedikit
extinct	= punah
famine	= kelaparan
harness	= mengendalikan
malnourished	= kurang makan
die of starvation	= mati kelaparan
scarce	= jarang
so much so	= sedemikian hingga
sewage	= kotoran dalam pembuangan air
rubbish	= sampah

Pertanyaan Bacaan

1. Why is the earth compared to a giant spaceship?
2. Why should we use air and water carefully?
3. Can you describe life about two billion years ago, before the first man appeared?
4. Why should man harness nature?
5. What is a big problem to man today
6. What is the consequence of too many people in the world?
7. What have we done that has harmed our water supply?
8. In what way have we been very careless with the good soil?

Analysis

1. Analysis
2. Analysis
3. Comprehension
4. Analysis
5. Comprehension
6. Comprehension
7. Comprehension
8. Synthesis

Unit 15

THE PROCLAMATION

It was a bright morning on Friday, 17th August 1945. A small crowd had gathered in front of Soekarno's residence at 56 Pegangsaan Timur Street. Almost everybody who had anything to do with the preparations for the Proclamation was there: the members of the Committee for the Preparation of Indonesia's Independence, representatives of the Vanguard Corps and the Special Vanguard Corps, government officials of the municipality of Jakarta, and many others.

At about 10.30 local time everything was ready for the historic occasion. Dr. Muwardi, who acted as master of ceremonies, opened the meeting, followed by Suwirjo as deputy mayor of Jakarta, then by Hatta who said a few words about the importance of the event they were witnessing. Finally Soekarno stepped forward towards the microphone which was standing in front of the audience in the front hall of the house, and spoke the following words: "Brothers and Sisters.

I have requested your presence here to witness a very important event in our history.

For tens of years, even hundreds of years, we the people of the Indonesian nation, have struggled for our country's independence. Our efforts to achieve independence have had their ups and downs, but our spirit kept on striving for our ideal.

Even during the Japanese occupation we did not cease our efforts to achieve national independence. We may have appeared to be leaning on the Japanese, but in reality we were gathering our own strength, we were relying on our own power.

Now the moment has arrived when we truly take our nation's destiny into our own hands. Only a nation which dares to take its destiny into its own hands will be able to stand firmly.

So last night several of us deliberated with the leaders of our people from the whole of Indonesia. The meeting was unanimously of the opinion that now is the moment to declare our independence.

Brother and Sisters! We hereby state our resolve. Please give your attention to our proclamation.

PROCLAMATION

We the Indonesian nation hereby declare Indonesia's independence. Problems pertaining to the transfer of power and other matters will be dealt with in the correct manner and in the shortest possible time.

Jakarta, the 17th day of the 8th month in the year 45 In the name of the Indonesian people.

Soekarno/ Hatta

Dear Brothers and Sisters!

We are independent now!

From now on we will build up our country! An independent country, the Republic of Indonesia, independent forever, God willing!

God bless our independence!

From then on the Indonesian Revolution was in full swing.

The ceremony was concluded by flying the Red-and-White flag and by singing the national anthem, "Indonesia Raya" (Greater Indonesia)

(Adapted from The Japanese Occupation and Indonesia's Independence by Nugroho Notosusanto)

New Vocabularies

various	= bermacam-macam
municipality	= kotapraja/ kotamadya
witness	= saksi
struggle	= berjuang
effort	= usaha
achieve	= mencapai
destiny	= tujuan
unanimously	= dengan suara bulat
declare	= menyatakan
accurate	= tepat

Pertanyaan Bacaan

1. Who were gathering at 56 Pegangsaan Timur?
2. What was meant by the "historic occasion" in the second paragraph?
3. How many people spoke before Soekarno's address to the crowd?
4. Did the struggle for independence, according to Soekarno's speech, cease during the Japanese occupation?
5. What policy did the Indonesia leaders seem to make?
6. Who signed the Proclamation?
7. What was Hatta's position in the government?

8. Did the ceremony of flying the Red-and-White take place before the Proclamation?

Analysis

1. Comprehension
2. Comprehension
3. Comprehension
4. Comprehension
5. Comprehension
6. Comprehension
7. Comprehension
8. Comprehension



APPENDIX II

KEY ANSWERS

Unit 1

1. Nowadays Indonesia is conducting the campaign for forest Conservation.
2. The benefits to mankind of our tropical forests are: They regulate the climate, ensure a constant supply of fresh water to lowland farms, and provide us with food, fuel, fibres, building materials and medicines.
3. Tropical forests give us rubber, cocoa, numerous pharmaceuticals, dyes and tanning agents.
4. Because tropical forests contain about half of the world's estimated ten million species of plants, yet less than one per cent have been studied for their possible benefits to mankind.
5. Because destroying it will result in soil erosion, land slides and degradation of valuable form land.
6. Ten million species of plants in tropical forests have not been studied up to now.
7. Because many people have destroyed trees and forests.
8. The excessive felling of trees and the reckless opening up of tropical rain forests can speed up the destruction of the entire country.

Unit 2

1. No, it doesn't. Each year the sun appears to travel from north to south.
2. The season of summer is most like our own dry season.
3. Yes, it does. From November to March the monsoon blows from the north-east, across the Pacific Ocean, and it is the wet season.
4. Countries farther north than the tropic of Cancer, or farther south than the tropic of Capricorn, have four seasons.
5. In the season of autumn the trees are bare in England.
6. The Summer is the hottest season in New Zeland.
7. In the season of autumn the crops are harvested in Europe.
8. In Indonesia we can find snow in Irian Jaya.

Unit 3

1. The word "marine" in English means "sea"
2. Yes, there are
3. A great many fishes eat the plankton.
4. Shrimps and lobsters live on the seashore.
5. No, they don't. They grow in the shallow sea.
6. Chinese and Japanese like to eat seaweed.
7. Because the sunlight cannot penetrate the depths.
8. Because they want to know all the animal and plant species that live in the waters of the sea.

Unit 4

1. We know it from the investigation done by many scientists including Galileo and Newton.
2. Yes, they do. Gravitational force depends on the masses of the bodies involved.
3. The earth exerts a strong force of gravitation.
4. Yes, there is. We can perceive it when a body resists gravity.
5. When we lift up a stone there are two forces involved.
6. Because a body escapes from the influence of the earth's gravitational pull, it can become "weightless".
7. Yes, it is. On the moon the force of gravitation is less than on earth.
8. Yes, it does. Gravity differs slightly from place to place because of the shape of the earth.

Unit 5

1. The Federation of Malaysia was proclaimed on 16th September 1963.
2. In Malaysia before 9th August 1965 there were eleven states of the Federation of Malaysia, plus the states of Sabah, Serawak, and Singapore.
3. His men had been killed by malaria.
4. Had the pioneers not worked hard, rubber would not play the important role that it does today in the country's economy.
5. Henry Nicholas Ridley will always be remembered in Malaysia because he was the pioneer of rubber, the first director of the Botanical Gardens in West Malaysia.

Unit 6

1. Hydroponics is an unconventional growing technique.
2. Plants basically need the nutrients and moisture in the soil.
3. An English physician started hydroponics 1690.
4. A Californian physiologist, W.F. Gerick, published guidelines for hydroponic agriculture.
5. A hydroponic tomato-plant produces more than a soil grown tomato-plant.
6. Everything is carefully controlled in the greenhouses: the temperature, the humidity, and the air circulation.
7. Some countries which have practised hydroponic farming are Kuwait, Puerto Penasco, Mexico, and on Sadiyat Island in Abu Dhaibi.
8. Yes, it is. Because hydroponic farming can produce more fruit and vegetables each year mostly tomatoes, cucumbers, lettuces and melons.

Unit 7

1. The poorer nations will contribute most to the population explosion.
2. A dramatic decline in the mortality rate and a high or above average birthrate is the effect of advances in medical science on the growth of the population.
3. To live decently, people need food clothing, housing, health and educational facilities, as well as employment and recreation.
4. Yes, they are. They are successful in fighting to provide for the needs of their populations.
5. No, it isn't. Nowadays living in the cities has become increasingly difficult and even dangerous.

Unit 8

1. The word turbo means something that spins or twirls.
2. Yes, they do. Engines in general rotate like the turbine when they move.
3. Yes, I do. They are economical devices, because they can be driven by steam, water, gas or air.
4. Generators in hydro-electric power stations can be used to make turbines spin.
5. Impulse turbines and reaction turbines decide the velocity of the falling water.
6. Yes, it is. Gas turbines work on the same principle as steam or water turbines, but are driven by hot gas which is produced by burning liquid fuel such as

- paraffin, heavier oils, or gas in air.
7. Yes, they can. Turbines can be used for planes.
 8. Air turbines are the smallest turbines I know of.
 9. The impulse turbines and the reaction turbines, both make use of the energy of falling water which increases in velocity as it falls under the influence of gravity.
 10. The word "power" in the phrase "power station", in the fourth paragraph means "electric".

Unit 9

1. The reason for the shift in interest and involvement from the family to groups outside the family is they very commonly have misgivings about the changes taking place in their interests and may experience conflicting feelings.
2. Because they may enjoy some aspects of their dependent relationship with their parents; and they may also find their associations with their peers satisfying.
3. Because at home they have a subordinate status their friends are much more willing to accord them a position of equality.
4. They are becoming more distant in their manner, more rebellious, less responsive and less involved in the life of the family, they may feel threatened.
5. They realize that their relationship with their children is beginning to change.
6. The outside world in this passage means losing a part of themselves. Their children are becoming less involved in the life of the family.
7. Parents, too, often complicate the problem. They see that their relationship with their children is beginning to change.
8. Because they consider that any form of dependence a sign of weakness.

Unit 10

1. The electron was discovered in 1897
2. The atom is the smaller particle.
3. Because they are good conductors.
4. Some good insulators are hard rubber, glass, wax and certain kinds of plastic. They are good because they can be used to confine a current to the desired path well.
5. The cord on an electric appliance can be made to flow as electric current.

6. A conductor is used for electric circuits to provide a path for the current.
7. An insulator is used for confining a current to the desired path.
8. A piece of wire, generally copper, surrounded by a type of plastic such as vinyl, is needed to make a cord for the refrigerator.

Unit 11

1. The air contains the gases oxygen and nitrogen, and small quantities of other gases.
2. Gas becomes liquid if it is cooled down enough.
3. Dry ice is the oxygen used in factories for making a very hot flame to cut and weld steel is sometimes stored and carried about in the liquid state and solid carbon dioxide. It is usually used for keeping ice-cream cold.
4. The three kinds of gas are used for cooking are:
 - the first kind is made of naphtha, which is a light oil.
 - the second is made from coal.
 - the third, natural gas, is almost entirely methane.
5. Because people cannot detect any leak that may occur.
6. I think people that cook on a boat use bottled gas under name of "Elpiji".
7. Several places in Indonesia that produce natural gas namely Bontang, Arun, etc.

Unit 12

1. Indonesia is rich in natural resources.
2. Rubber, cocoa, numerous pharmaceuticals, dyes, tanning agents, oils used in floor polishes and cosmetics; spices such as chili and vanilla, and useful materials such as rattan, cane and bamboo. Can be found in our tropical forests.
3. The motto, "One country, one nation and one language" makes the cultural and political development become close to each other.
4. "Gotong royong" is done by the people of Indonesia in rice planting, harvesting, wedding ceremonies, constructing houses and other activities.
5. Because all members have the right and duty to participate in deliberations of common interest.
6. Respect and equal rights for women have an important role in the Indonesian way of life.
7. The tolerance of the Indonesian people has been

proved. Through long centuries of experience many beliefs and ways of life penetrated through Indonesia, and all have been blended harmoniously in accordance with the local environment.

Unit 13

1. The three main purposes of libraries are:
 - they collect records of what people have thought and done.
 - They preserve those records.
 - they make them available to you and me.
2. We go into a library when we give ourselves a chance to find out what libraries offer us. In the library, we can entertain ourselves, learn on our own, and be inspired by ideas that otherwise we might never have dreamed of.
3. Because whatever the arrangement, the object is to bring good books, information services, and entertainment to young people.
4. Yes, they are. Some of the book in the collection for young adults are written especially for teenagers.
5. Career information is the important work of the young adults' collection.
6. Some of the duties of a librarian are:
 - to help each group organize its club.
 - to guide the members in using the books and other material that will be most helpful.
 - to encourage reading during the holidays.
7. The aim of libraries that have vacation reading clubs is to encourage reading during the holidays.
8. The use of a library catalogue is how to use the catalogue that tells what is in the library, and how to find books and other material.
9. Yes, he can. Everyone can make use of libraries.
10. In a library, we can get knowledge of everything. We can absorb the knowledge of the developed countries. We can compare their knowledge with ours.

Unit 14

1. Because the three and a half billion people now alive are its passenger.
2. Because there is a limited amount of air for all of us to breathe and there is also a limited amount of water.
3. Life on earth had a simple beginning, about two billion years ago. Countless tiny organisms slowly evolved, then larger plants, and later a richly

varied kingdom of animals. Most of the early species of plants and animals became extinct.

4. Because he didn't have an easy life. Famine, disease, harsh climates and war were his constant enemies.
5. The numbers of population have vastly increased, so much so that today over-population is a big problem.
6. The consequence of too many people in the world is that there are too many people for too little food. Today, half of the people in the world are malnourished. Thousands of people die of starvation every week.
7. We have wasted lots and lots of water, and we have been very careless in allowing the rivers and lakes, which supply us with the water we need, to become severely polluted with sewage, rubbish and waste from our factories.
8. We have been very careless with the good soil we have now, for we allow it to be badly polluted or to be washed away by erosion.

Unit 15

1. A small crowd were gathering at 56 Pegangsaan Timur.
2. The "historic occasion" in the second paragraph means the ceremonies of Indonesia's Independence.
3. Three people spoke before Soekarno's address to the crowd.
4. No, it didn't. During the Japanese occupation we did not cease our efforts to achieve national independence.
5. The Indonesian leaders took their nation's destiny into their own hands.
6. Soekarno and Hatta signed the Proclamation.
7. Hatta's position in the government was the Vice President of Republic of Indonesia.
8. No, it didn't. The ceremony of flying the Red-and-White took place after the proclamation.

