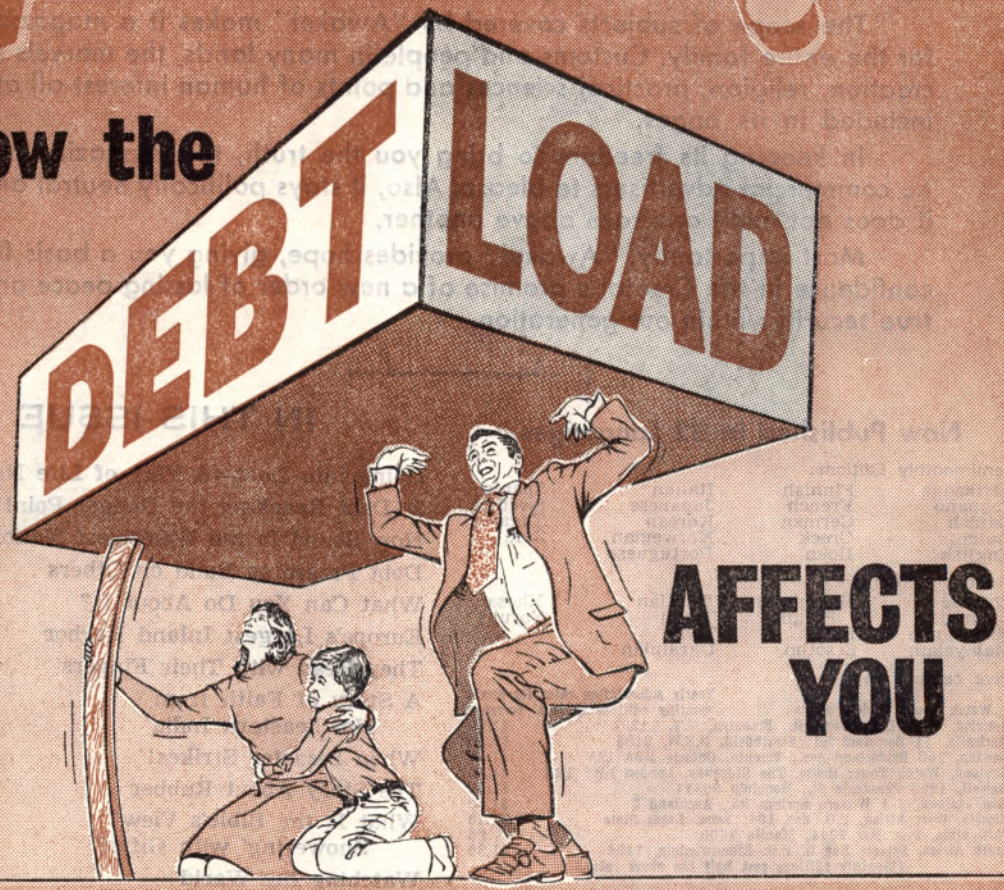
Awake!

How the DEBT LOAD AFFECTS YOU



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Today as never before, what goes on in the rest of the world affects each one of us. "Awake!" reports on the world scene. But it does more for you personally.

It probes beneath the surface and points to the real meaning behind current events. And it gives practical suggestions to help you to cope effectively with the mounting problems of our time.

The scope of subjects covered by "Awake!" makes it a magazine for the entire family. Customs and people in many lands, the marvels of creation, religion, practical sciences and points of human interest all are included in its pages.

In keeping its freedom to bring you the truth, this magazine has no commercial advertisers to please. Also, it stays politically neutral and it does not exalt one race above another.

Most importantly, "Awake!" provides hope, giving you a basis for confidence in the Creator's promise of a new order of lasting peace and true security within our generation.

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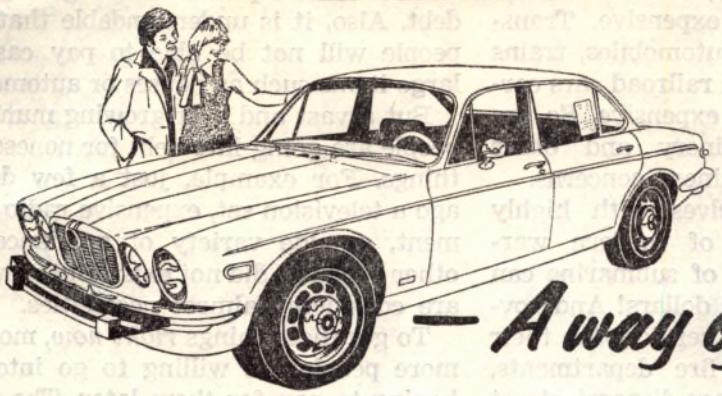
Going into DEBT



—*A way of life now*

HAVE you ever gone into debt? Did you ever borrow money, or buy something on credit and promise to pay for it later?

If so, you have plenty of company these days. Never before in the entire history of the world have so many people gone into debt.

The same thing is happening to companies, cities and to entire nations. They are all far more heavily in debt than ever before. As a result, the world's present load of all types of debt comes to, not just billions of dollars, but to *trillions* of dollars!

Different Way

Thus, going into debt has become an accepted, "normal" way of life. And more and more millions of people are doing it. But this present attitude toward debt is in sharp contrast to the attitude that past generations had.

Back then, most families felt that going into debt was almost shameful, something to be avoided if at all possible. People usually did without many things rather than go into debt.

Of course, in times past the way of life was not as complicated as it is today. And for most people throughout the world, an agricultural way of life prevailed.

For example, homes were far simpler in those days. In many countries forests were plentiful; so wood houses could be built rather inexpensively. In some nations, mud or clay was mixed with straw and used to build simple homes. In tropical countries, palm leaves or straw did the job. No great cost was involved with such homes.

For transportation, walking often was all that was needed. If faster means of transport was desired, a horse or a donkey might be used, or even a camel. Heavy loads were pulled in a wagon by an ox, a mule or a horse. Few families had to borrow any large sum of money to buy such items.

Dramatic Changes

Today, all of that has changed dramatically in the industrial societies, and even

in the cities of the agricultural lands. Pursuing the former simple, inexpensive way of life is all but impossible now.

In such places today, homes are far more complicated and expensive. Transportation is by costly automobiles, trains or airplanes. Trucks and railroad cars carry huge loads, but are expensive. So are office buildings, machinery and other equipment used by business concerns.

Nations arm themselves with highly sophisticated weapons of modern warfare. Why, a new type of submarine can now cost about a billion dollars! And governments provide many services for their people: police forces, fire departments, garbage collections, sewage disposal, street maintenance, water supplies, welfare and social-security payments, and many others. All of that takes a huge amount of money in modern society.

Few people, few companies, few cities or countries can save the money in advance to pay for all those things. So they borrow, thus going into debt.

Another Reason

Where individual debt is concerned, the loss of a job or other economic reverse can result in a person's having to go into debt. Also, it is understandable that most people will not be able to pay cash for large items such as houses or automobiles.

But a vast and ever-growing number of people are going into debt for nonessential things. For example, just a few decades ago a television set, expensive radio equipment, a wide variety of appliances and other products did not exist. But now these are considered almost necessities.

To get these things *right now,* more and more people are willing to go into debt, hoping to pay for them later. The person who saves money first to pay cash is becoming a rarity.

But can the world's free spending and heavy borrowing continue? Can debt be piled on top of debt without someday causing harsh consequences? Indeed, has the world's debt load already reached the danger point?

WHAT happens when a person borrows too much money and then cannot pay it back? He goes bankrupt. His possessions can be taken away by those to whom he owes the money—his creditors.

When a business cannot pay its debts and goes bankrupt, it usually ceases to exist. Its assets may be sold off by the creditors. And the company's employees are thrown out of work.

A similar thing can happen to an entire country too. In the Great Depression of the 1930's, the standard of living of entire countries was reduced drastically. Tens of millions of people were forced into poverty as unemployment skyrocketed.

Could that happen again to entire na-

tions? Has the debt load reached such a danger point?

Government Debt

Perhaps the most dangerous type of debt, one that could affect the largest number of people, is the debt incurred at the government level. If a government goes bankrupt, then many of its people will suffer.

How are the governments of this world doing in regard to debt? The answer is: very badly. They are deeply in debt. And those already large debts are increasing rapidly.

Those debts come about in two ways: (1) those incurred in their transactions with other countries, and (2) those incurred within their own country.

How does a government go into debt with another country? In much the same way that you could go into debt: by spending more money than you make.

For instance, France must import most of its oil. Oil is costly. So France pays a great deal of money to the oil-exporting nations. Also, France buys other products from various countries. Now, in recent times France has purchased more from other nations than it has sold to them. This has resulted in a deficit, a debt to those other countries. To pay that debt, France has to borrow money from other nations or from various banks.

Many other countries are in the same condition. They are spending more money with other lands than they are making. And among the reasons for their growing international debts is, as with France, the purchase of oil. They do not produce enough oil, or any at all, and thus must import it. So the relatively few oil-surplus nations grow wealthy, while most of the other nations go deeper and deeper into debt.

Of course, other factors besides oil are involved in building external debts. Nations also import machinery, finished goods, food, armaments and a wide variety of other products. And when not enough is exported, debt results.

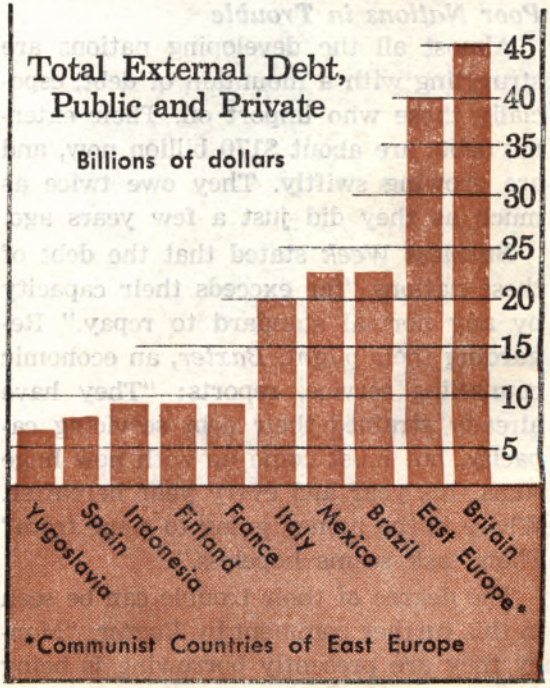
Alarming Debt

Late in 1976 the New York *Times* carried an article with this headline: "The Problem of Enormous Buildup of International Debt." The article stated the following:

"The biggest single worry in financial markets these days is over the enormous buildup of international debt—much of it owed to private commercial banks. There is no way to conceal the danger that some heavy borrowers from abroad may be unable to meet their obligations."

At the head of the external debt "list"

International Debt



is Britain. It has international debts of about $45 billion, a staggering amount for a nation with limited natural resources. Brazil and Mexico each have over $20 billion in external debts. Finland and Indonesia have nearly $10 billion each. The Soviet Union and its Eastern European allies have about $40 billion altogether.

France has external debts of about $10 billion, and these are growing. A Paris press headline declared: "Flashing Red for the French Economy." The publication referred to unemployment of more than a million, triple the level of the early 1970's; to inflation that was in double figures; and to a recent one-month foreign-trade deficit of about $1 billion, triple what it was a year ago.

The debt situation in Italy is even worse, about $20 billion. There, the retired head of the Bank of Italy said: "The deficits in Italy have now expanded beyond the capacity of the economy to absorb them."

Poor Nations in Trouble

Almost all the developing nations are struggling with a mountain of debt, especially those who import oil. Their external debts are about $170 billion now, and are growing swiftly. They owe twice as much as they did just a few years ago.

Business Week stated that the debt of these nations "far exceeds their capacity by any normal standard to repay." Regarding their plight, *Baxter,* an economic counseling service, reports: "They have already strained their debt servicing capacity, but must come up with new huge sums this year and every year hereafter. Where is the money going to come from? Their task seems hopeless."

The degree of their trouble can be seen in this further comment by *Baxter:* "Money they are presently borrowing is being used, not for desperately needed capital improvements, but to pay off currently maturing debts. The Euro-bankers are playing this game and are continuing to extend loans. But, some day, someone is going to get stuck, and stuck good. It is only a matter of time."

The world money system is closely tied together. Thus, some economists fear that if only a few countries were to go bankrupt, the entire system could go under.

No Improvement Foreseen

At the end of 1976, outgoing American Secretary of the Treasury William E. Simon told more than a hundred oil-importing nations that they faced another huge deficit for the year 1977. He estimated that it would be an additional $50 billion, on top of the existing huge deficits.

Simon also warned that the situation has changed for the worse since 1973, when the price of oil rose sharply. At that time some of the nations had surplus money and could pay for the higher-priced oil. But few have surpluses today.

Summing up the world economic situation, the New York *Times* said: "In the business and financial centers of Europe an air of gloom is spreading over prospects for the world economy and its capacity to tackle the mounting problems of debt management, sluggish growth and rising unemployment. The highly publicized difficulties of Britain and Italy have diverted attention from the fact that at least a third of the industrialized countries are in some serious financial trouble. . . . The poor nations of the developing world are in even worse shape, struggling under a mountain of . . . debts."

Added to all these external debts are the *internal* debts that governments have. These come about when they spend more

than their incomes *within* their own nations. And often these internal debts are much larger than their external debts.

As many nations go deeper into debt, the question arises: Who will rescue them? One country often looked to for help is the United States. But in what condition are her finances?

How Sound is the WEALTHIEST NATION?

MEASURED by the value of goods and services produced, the United States is the world's wealthiest nation. It also has one of the highest living standards.

In *Vital Speeches of the Day,* an economist observed: "It is true that the United States' economy has raised our standard of living to an unprecedented level of affluence. But it is no less true that in the space of one generation we have imposed on our economy the greatest debt structure in human history."

Yes, much of the current high standard of living has been attained on borrowed money.

Enormous Debts

As a result, the United States has an enormous debt load, with more debts piling up each year. Externally, the country often runs deficits. Internally, its debts are enormous.

Robert Swinarton, vice-chairman of Dean Witter & Co., states: "As a nation, we've been afflicted with a wild impulse to go into hock, or as a recent editorial in Barron's put it: 'Virtually the entire nation, from bureaucrat to breadwinner, has evinced a kind of rage to borrow. This rather universal propensity to burn up the future remains, we're convinced, one of the excesses for which there has yet to be a day of reckoning.' "

The total debt in the United States is now well over *three trillion* (three thousand billion) dollars! That is about twice as much as the value of all the goods and services it produces in an entire year.

Regarding this vast debt, *U.S. News & World Report* asks: "Is It Out of Control?" It answers: "The mountain of debt has become far too heavy for a good many borrowers."

Of the gigantic debt total, the federal government owes about $650 billion, cor-

porations about $1,500 billion, individuals about $1,000 billion, and city and state governments about $230 billion.

Federal Debt

The federal government has had huge deficits in the past few years. These have come about, of course, by spending far more money than it has been making in taxes.

In each of the last two years, the deficits have been enormous. In fiscal 1975, the deficit was $43.6 billion, larger than at any time since World War II. In fiscal 1976, it was $65.6 billion, the largest in U.S. history! Why, the interest alone on

'All currencies have lost about three fourths of their pre-World War II buying power'

the federal debt is now about $40 billion a year! In 1939 it was $1 billion.

Nor would it be easy to cut costs. The government's "built-in" obligations continue to grow. For instance, the cost of modern armaments continues to rise, now being well over $100 billion a year. The cost of pensions for government employees is six times as high as it was ten years ago, and is expected to double or triple in ten more years. The Civil Service Retirement Fund is paying out more than it is taking in. So is Social Security.

The Wall Street Journal claims that the government's obligations for just the Social Security System's payments to the elderly, retired and disabled will mean a future deficit of about 2.5 trillion (2.5 thousand billion) dollars. The newspaper says: "As liberals like to argue, the nation owes this debt to itself, and it will be paid off by raising taxes in the future. Of course this is nonsense. Increasing future taxes by these magnitudes can only disintegrate the tax base."

Financing Debts

When the government runs a deficit during the year, it must borrow money to pay its expenses. One way in which it does this is to sell securities, such as government bonds, to individuals, banks and corporations.

But the government finances its borrowing in another way too. It can 'create money out of thin air.' On this, the New York *Times* comments: "Only one thing is entirely agreed, accepted and understood about the somewhat mysterious and often controversial subject of the Government's monetary policy, which is conducted by the semi-independent Federal Reserve Board. This is that the Fed, as it is commonly known, can create money out of thin air by writing a check on itself without any deposits to back that check. It can do so in unlimited amounts." True, Congress must continually approve new and higher debt limits, but it nearly always does.

Of course, the government hopes to make enough money in future taxes to pay back the value of the securities it has issued, in effect canceling the debt. But in the past sixteen years, the United States has had only one small surplus, having deficits the other fifteen years. And the deficits have grown much larger recently.

Fueling Inflation

Many economists feel that government debt is one of the main reasons for inflation. So much excess money pumped into the economy causes the prices of goods and services to go up.

One result of all this excess spending is that in the past four decades the American dollar has lost about 75 percent of its purchasing power. But this has happened elsewhere in the world too.

The American Institute for Economic Research states: "All currencies have been and are being degraded steadily. All now have lost about three-fourths, at least, of their pre-World War II buying power, and all seem destined to depreciate much more in the next several years . . . before they become practically worthless."

The Institute places the main responsibility for this degrading of money on the "inflationary purchasing media created to finance government deficits."

"Bitter Lessons" Ahead

Somberly, this report also states: "We see little possibility that there will be a return to sound money-credit procedures until after some bitter lessons have been learned during a future depression."

Similarly, *Baxter* says: "The inflationary impact of large and persistent budget deficits is destroying the financial foundation underlying the U.S. economy."

Gilbert M. Haas, head of an investment counseling firm, also observes: "Constant overextension of debt has caused a steady deterioration of financial liquidity [cash or assets easily converted into cash]. Ultimately this will lead to an international money panic, followed by a worldwide depression."

Could the government simply cut expenses, bringing its budget into balance? Yes, but that could mean higher unemployment. The economic system is so structured that if the government now stopped pumping "created" money into the economy, many people could lose their jobs. And there are already too many unemployed. Also, taxes are already high, so that raising them to try to balance the budget could meet severe resistance, perhaps even a 'tax revolt.'

Thus, the world's wealthiest country has its own serious money troubles. It is awash in debt, and is in a poor position to help other nations that are drowning in debt.

DEBT PRESSURES build on OTHERS

THE plight of national governments in regard to debt is being duplicated by others. Corporations, city and local governments, and individuals also are facing serious pressures because of too much debt.

It is getting more difficult to come out from under these debts. This is a main

reason why the recession of the past few years proved to be so difficult for many. Loans could not be paid back; so bankruptcies soared.

Corporate Difficulties

As an example, *Industry Week* reported: "West German business failures reached a record high . . . Failures involving losses and debtor demands exceeding $400,000 jumped by 30%."

In December 1976 *The Wall Street Journal* noted that Japanese corporate failures reached a record the previous month, adding: "Corporate collapses for all 1976 will total a record 15,000, up from the prior record of 12,600 set last year."

In England, the *Daily Mail* reported that bankruptcies in Britain have soared to the highest level in sixty years "with nothing approaching it even in the depths of the depression of the 1930s."

In the United States a number of large corporations failed, as did others. More banks went out of business than at any time since the country's entry into World War II. Yet, the Institute for Economic Research warned that these "are just tips of bankrupt icebergs floating in a vast sea of debt."

Cities in Trouble

Much the same thing is happening to a number of city, state and local governments. Perhaps the most publicized of all of these has been New York city. Its debts have mounted to about $13 billion. Last year the city was forced to halt payments on short-term debt, although the courts later declared such a move illegal.

But *Business Week* said in an editorial: "Actually, New York City's troubles are harbingers of a broader problem. Every major city in the U.S. is going to have serious financial distress in the next three to five years."

City after city is indeed going deeper into debt. Their tax revenues simply are not enough to pay for things they do. For instance, in the nation's capital, Washington, D.C., expenditures since the 1960's have increased about 15 percent each year, but tax revenues have increased only about 6 percent.

'The typical wage earner is spending almost everything he earns. He lives near the limits of his income. Even a minor emergency could be disastrous.'

Japan reported that 39 of the country's 47 prefectures, or states, would show deficits. Two cities already have declared bankruptcy. *U.S. News & World Report* estimated that "about 100 of Japan's 643 cities will be in the red, up from 53 two years ago." Many cities in other countries are finding similar debt pressures building.

Consumer Pressures

The average consumer in many lands is increasingly feeling debt pressures. In the United States, much of what the typical American has left after expenses goes toward paying off debts.

Hence, when the recent recession struck, many could not pay off these accumulated debts. That is why bankruptcies reached an all-time high.

NEXT ISSUE—SPECIAL

How Long Would You Like to Live?

Yet, consumer debts continue to mount. The Los Angeles *Herald-Examiner* reports: "The typical wage earner in Los Angeles is spending almost everything he earns. He lives near the limits of his income. Even a minor emergency could be disastrous."

The newspaper noted that the "typical person" with debt problems had an income of $800-900 a month, but owed "about $10,000, usually to the bank, credit card companies, retail shops, and gas companies. And he is a nervous wreck."

The Milwaukee *Journal* told of a ring of prostitutes that included housewives who "used their earnings to supplement family income." The Tokyo *Daily Yomiuri* reported the suicide of a housewife "because she was hard pressed to pay back a loan made to build a house."

True, some having difficulties today are not spending their money unwisely. It is simply that prices are so high that their incomes do not meet expenses. But on the other hand, many have spent unwisely on things that they have not really needed. They have gone over their heads in debt, and have had to pay the consequences.

Questionable "Security"

Even persons who have money in the bank have begun to feel somewhat uneasy in recent years. This is due to the fact that large bank failures have occurred.

In the United States, the Franklin National, one of the nation's twenty largest banks, collapsed. In Germany, the large Bankhause Herstatt failed. A number of other banks also have failed. And so overextended are others that Martin Mayer, in a comprehensive survey entitled "The Bankers," stated: "There are billions of dollars of potential loan losses in the system, and the clock ticks toward the moment of their detonation. The banking structure that is now building *can* collapse."

"FDIC officials know what most of the public doesn't: that the agency has only enough money on hand to cover about 1 percent of deposits."

But would that not be impossible in the United States? Are not deposits up to $40,000 "secure," guaranteed by such agencies as the Federal Deposit Insurance Corporation?

True, but of interest is what Alvin Toffler says in his book *The Eco-Spasm Report:* "FDIC officials know what most of the public doesn't: that the agency has only enough money on hand to cover about 1 percent of deposits. It cannot possibly meet a wild, runaway demand by hundreds of thousands of terrified bank customers."

It is such a runaway that officials fear. This could take place if only a few countries went bankrupt, or if, due to a series of corporate or city failures, a large number of banks began to go under.

However, during 1976 was there not some economic recovery from the previous recession? Yes, there was, and more is hoped for. That is the pattern of recent decades. But recessions get more severe, and recoveries more moderate with higher permanent unemployment.

Regarding this, *Baxter* said last year: "The economy is rebounding now to be sure. But it is being supported by only a thin layer of liquidity [cash, or assets easily converted into cash] on one hand, and massive budget deficits on the other. History has proven that the latter destroys liquidity in the long run."

But where does this leave you? What can the average person do to protect himself?

What can YOU do about it?

REALLY, there is little that you can do to influence today's troublesome world economic conditions. You did not cause them, but, instead, you are a victim of them.

Yet, there are things that you can do to help ease the burden of making a living today. Often, this revolves around self-control. How so?

Exercising Self-Control

One of the greatest problems regarding debt today is that many people cannot exercise self-control when it comes to buying things. Before they fully realize it, they have spent too much and must borrow money needlessly.

But in difficult economic times, stern measures should be taken. A family's needs should be carefully reassessed. Is the family living within its income?

If not, then nonessentials can be cut out, or at least reduced. True, one's neighbor may have, say, an expensive color-television set. But if this is going to put the family deeper in debt, why not wait until it can be afforded?

Expensive entertainment and luxury foods, as well as costly liquors, can be curtailed with no loss. Smoking should be eliminated; this not only will save a great deal of money over the course of a year, but may save one's very life!

For those who gamble, it would be well to ask themselves how gambling establishments, such as racetracks and betting "parlors," exist. They can exist only because gambling is a losing proposition for the overwhelming majority of people. If it was not, then the gambling establishments could not make their huge profits. So self-control here could save large sums of money that could be better spent, or saved for future purchases.

The key to saving money is to lower one's desires and expectations so that they realistically conform to income. It does no good to dwell constantly on what would be nice to have. Instead, consider what you can afford without going into debt.

Pay Cash

There is great encouragement to borrow money these days. Money lenders are everywhere. But why? Because money lenders make a good profit.

True, the cost of 6 or 7 or 8 percent for borrowing money may not seem high. But in actuality that comes to about double or triple over the life of the loan. Why? Because you do not have the use of all the money all that time, but must begin paying it back almost immediately.

For instance, in a recent year average car loans in the United States cost $860 in interest charges. This is above the actual cost of the car. Now, while it usually is not possible for most people to save in advance for such a large item, it does

demonstrate how much loans can cost. The same principle is true of smaller loans. So, buying on credit is indeed costly. Pay cash (or by check) whenever you can.

A major problem is the use of credit cards. More and more people use them for purchases, including food. But credit cards should be used as if they were dangerous weapons. It is easy to purchase things when you do not have to pay cash. But trying to pay for hasty, unnecessary credit-card purchases can cause money hardships later.

If at all possible, save money in advance for purchases instead of borrowing. This not only prevents debt and large interest payments, but, if put in a bank, would collect interest.

On the Way Out

There are some things, then, that you can do to protect yourself financially at present. But there is nothing you can do to help the present economic system to survive. Why not? Because any recovery it makes in the near future will only be temporary.

God's unerring prophetic Word tells us that all of today's systems, including its economic ones, are "passing away." (1 John 2:17) They cannot last long, because it is God's purpose to intervene soon in man's affairs and to bring this unsatisfactory system to its finish.—Dan. 2:44.

That is why God's Word cautions: "Do not be loving either the world or the things in the world." (1 John 2:15) It will do no good to try to hold on to this system, or perpetuate it. Soon, as Jesus Christ foretold, "there will be great tribulation such as has not occurred since the world's beginning until now, no, nor will occur again." (Matt. 24:21) During that "great tribulation," today's money system undoubtedly will collapse.

Viewing the mountains of debt now building up everywhere, one can appreciate how swiftly such an economic collapse could occur. Indeed, the Bible shows that, as has happened before, "into the streets they will throw their very silver, and an abhorrent thing their own gold will become."—Ezek. 7:19.

Nor is that "farfetched." Even many observers of the world scene feel that something drastic must happen. For example, in *The Eco-Spasm Report,* author Alvin Toffler states: "What we are seeing today is not simply an *economic* upheaval, but something far deeper, something that cannot be understood within the framework of conventional economics. This is why increasingly mystified economists complain that 'the old rules don't work any longer.' What we are seeing is the general crisis of industrialism . . . What is happening, no more, no less, is the breakdown of industrial civilization on the planet."

Toffler observed that pessimistic predictions about the world economy were once dismissed as "lunatic." But, he notes, they "are now being taken seriously."

Because of what is certain to come in the future, you would do well not to put undue trust in material things. Money is necessary to daily living, true. But putting one's confidence in it is bound to result in disappointment.

What we all need to learn more about, and put our confidence in, is what will replace this old system. That will be God's new order, under his heavenly Kingdom government. (Matt. 6:10) Here, on earth, under a righteous administration, all of mankind's distressing problems will be solved. This includes the economic ones. And they will be solved to our total satisfaction, since the Bible says of the Almighty Creator of the new order: "You are opening your hand and satisfying the desire of every living thing."—Ps. 145:16.

Europe's Largest Inland Harbor

By "Awake!" correspondent in West Germany

AS MY wife and I took leave of friends in a beautiful section of southern Germany, they asked: "Where will you go?" We explained our destination to be on the Rhine, in the neighborhood of Duisburg. "Oh," our friends exclaimed, "you are going where it sparks and smokes!"

Anyone who has visited Duisburg knows what they meant. During the day clouds of smoke belching out of huge chimneys darken the sky. At night blast furnaces cause the heavens to take on a fire-red appearance.

But instead of letting this discourage us, we decided to go exploring. We learned that Duisburg is the location of Europe's largest inland harbor. Its quays extend for a distance of 27 miles (43 kilometers) and accommodate 22 docks. This is an important harbor. During 1974, 68 million metric tons of goods were handled here. In contrast, during the same period Hamburg's largest seaport cared for only 57 million metric tons.

An Ideal Location

A reason for the importance of this inland harbor is its ideal location. Blast furnaces of some of the world's largest iron and steel producers are located at Duisburg. The immediate vicinity contains rich supplies of bituminous coal. And within the city limits are a large copper works and a number of chemical factories. Concentration of industry along this part of the Rhine River and its nearby offshoot, the Ruhr, called for an efficient harbor.

Further enhancing its value as a harbor site, Duisburg links up with an international waterway and with East Germany by means of canals. In fact, with the aid of the Rhine-Main-Donau Canal it is possible to go clear to the Black Sea. Ships come to Duisburg from France, Spain, England, Scandinavia, Poland, Russia and other countries.

Taking a Look Around

Armed with some basic information, we decided to take a sight-seeing tour of this sprawling inland harbor. We chose a seat on the upper deck of the sight-seeing boat so as to observe everything without interference.

Just after pulling away from the shore, the silhouette of this area's huge industrial

complex caught our attention. Soon a large copper works appeared, one that processes more than a million metric tons of raw material each year. Our attention then turned to a chemical plant that has been in operation for over a century. The pollution there was irksome indeed. Brownish-yellow clouds of exhaust hung in the air. Rusty-red dust continually rained from the contaminated atmosphere, coating the entire vicinity. Though large sums of money have gone into air filters and other means of reducing pollution, these efforts have proved to be far from adequate.

Eventually we arrived at Schwanentor, the oldest part of Duisburg's harbor. There we saw the huge silos of a grain harbor that was built in 1840. Then we turned around and headed back toward the Rhine. There was much more to see.

In a short time, we sailed past an oil harbor with 600 immense tanks. Ships from Rotterdam sat anchored at the pump station, waiting to unload their supplies of crude oil. On the other side is a scrap harbor. Here is found the largest hydraulic scrap press in Europe. With a force of some 5,120 pounds per square inch (360 kilograms per square centimeter), this device mashes together and bundles up fragments of scrap metal, which is then used for producing steel. In these mountains of scrap were many automobile bodies. We wondered: "When will ours end up here?"

The air became increasingly murky, and we quickly discovered why. Our sightseeing boat was passing cranes and conveyor belts handling coal. Interestingly, this atmosphere seems to have little ill effect on the white seagulls that flutter about restlessly. They not only find food in the grayish-green harbor waters, but also maintain astonishingly clean vests in spite of the blackened atmosphere.

Tugboats Old and New

The harbor widened and we caught a glimpse of tugboat units. In times past, tugs pulled barges behind them, but nowadays they push them. In this way a tugboat can move six large barges connected to one another. The scene reminds us of a railroad switchyard. These "pushing tugs" employ two crews so as to work day and night.

Here and there, however, we saw older tugboats. The flower boxes that graced their cabin windowsills, the laundry that fluttered in the breeze and the playpens enclosed in wire netting reminded us that family life still exists on the waters of Duisburg harbor.

We even had opportunity to go aboard an old paddle-wheel tug. This steam-driven vessel now serves as a floating navigation museum. It is 246 feet (75 meters) long and has two black chimneys that rise almost 30 feet (9 meters) skyward. At about midship its sizable wheel housing on the outside made it evident that we were aboard an antique. On display inside the ship were many historical pieces, including models of old ships, laws that formerly regulated river traffic and even a facsimile of an ancient Roman anchor made of wood.

Do you plan to visit Germany? If you come to the vicinity of Duisburg, you will find it worth while to do as we did—tour Europe's largest inland harbor.

THEY READ with their FINGERS

DO YOU like to read? If so, perhaps one of your favorite pastimes is to relax in a comfortable chair with a good book or magazine in your hand. Just think of the many things you have learned, places you have visited, people you have talked to—all by means of the printed page! But what if you were blind? Would this door of learning be closed to you? No, not if you knew how to read with your fingers.

By means of the touch reading system known as Braille, tens of thousands of blind persons around the world have been able to enjoy reading. Today nearly everything that has appeared in print can be transcribed into Braille to be read with trained fingers. Hundreds of persons have even been aided in obtaining a knowledge of God's Word and purposes because the Holy Scriptures and Bible study aids have been produced in Braille. But such has not always been possible, since the standardization and development of Braille has taken place only within the last century and a half.

History of Braille

For many centuries methods had been sought to make it possible for the sightless to "read" for themselves. Early efforts involved carving letters out of blocks of wood and then arranging them in proper order for the blind to feel with their fingers. Later, such letters were cast in lead or other suitable metals. Sometimes letters that were cut out of cardboard were employed. Needless to say, this arrangement was very cumbersome and time consuming. Adding to the difficulty was the fact that most of the letters used in those days were hard to distinguish by feel unless they were large.

A breakthrough in developing a reading system for the blind came through the efforts of Valentin Haüy, founder of a school for blind children in Paris, during the late eighteenth century. By chance he discovered that printed material that had been firmly impressed into paper could be felt by his blind students, and that they could, with some difficulty, identify certain letters. Haüy immediately began devising a system whereby the movable type commonly used in printing would be employed to impress the letters into the paper. Thus, embossed literature was invented.

The old problems remained, however, particularly that of finding a script that could easily be identified by touch. Primitive though Haüy's system might have been, pupils of his school acquired their education by this method for more than

forty years. Then one of the students, Louis Braille, devised a better system.

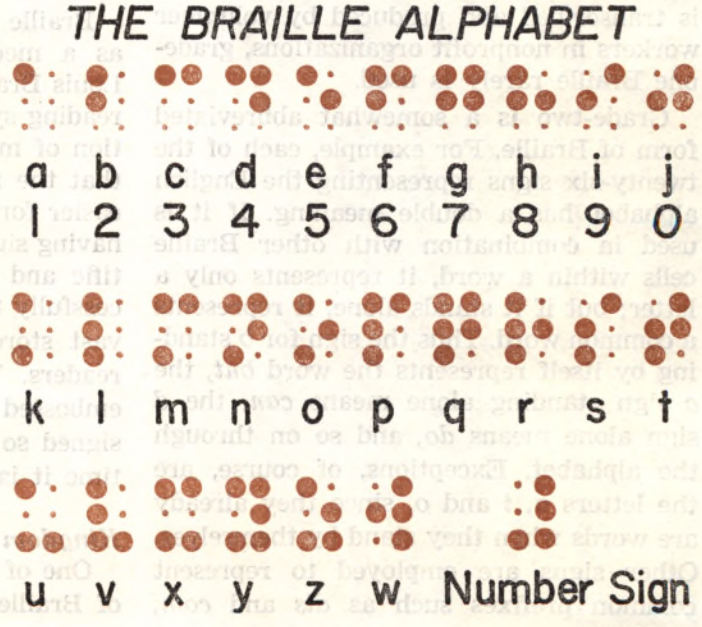
Louis Braille was ten years old when he was enrolled in Haüy's school, having been blinded at a very early age by an accident in his father's saddle-making shop. In time young Braille became interested in a touch reading system called "night writing." It had been introduced to some students by its inventor, Captain Charles Barbier. The French military used it to communicate at night, with no danger of giving away their position by telltale lights or vocal calls. An awl was used to emboss dots into heavy paper, which could then be felt in the dark by the soldiers. Night writing was based on a table of thirty-six squares, each square representing one basic sound of human speech. Two rows of up to six dots each were embossed into the paper. The number of dots in the first row indicated which horizontal line of the table of speech sounds the desired sound was in, and the number of dots in the second row designated the correct sound in that line. Night writing proved to be the springboard enabling young Braille to devise a system of touch reading that is in use to this day.

Initially, Braille designed his system to be used with the French language. But it has now been adapted to make it usable with many languages. Even languages with non-Roman alphabets, such as Chinese and Arabic, can be written in Braille. Successful efforts have been made by many organizations to standardize the Braille system used world wide. Hence, it now has become the universal communication medium of the blind.

How Braille Works

The Braille system utilizes a series of "cells" embossed in a horizontal row. Each cell represents either a letter, a number, a combination of letters or a word. A Braille cell consists of two vertical rows of three dots each, just large enough to permit the tip of the finger to detect the positions of all six dots. By varying the positions of the dots within the cell, a total of sixty-three different combinations is possible. In English Braille, twenty-six of these combinations, or "signs," are used to represent the alphabet, and the rest are used for punctuation, special contractions and short-forms.

A look at the accompanying illustration will reveal that the first ten letters of the English alphabet, *a* through *j*, are represented by combinations of the top four dots in the Braille cell. The numbers 1 through 9, and zero, are represented by these same ten signs preceded by a special number sign. The next ten letters, *k* through *t*, are formed by adding the lower-left-hand dot to the first ten letter



signs. The last six letters of the alphabet repeat the first signs, but with both lower dots added. The letter *w* is an exception, since there is no *w* in the French alphabet for which the Braille system originally was designed. The remaining combinations are used for punctuation, special contractions and short-forms.

These contractions and short-forms often make Braille difficult to learn. Especially is this so if one has become blind late in life, since the only way to learn Braille is to memorize all the signs. For this reason, there are various "grades" of Braille.

Grade-one Braille makes use only of the signs representing the alphabet and punctuation, numbers and a few special composition signs that are unique to Braille. It corresponds letter for letter with the visual print of the material. This grade is the easiest to learn, there being fewer signs to memorize than in other grades. On the other hand, grade-one Braille is the slowest to transcribe and read, and the end product is the bulkiest. Since most of the Braille produced today is transcribed and produced by volunteer workers in nonprofit organizations, grade-one Braille rarely is used.

Grade-two is a somewhat abbreviated form of Braille. For example, each of the twenty-six signs representing the English alphabet has a double meaning. If it is used in combination with other Braille cells within a word, it represents only a letter; but if it stands alone, it represents a common word. Thus the sign for *b* standing by itself represents the word *but,* the *c* sign standing alone means *can,* the *d* sign alone means *do,* and so on through the alphabet. Exceptions, of course, are the letters *a, i* and *o,* since they already are words when they stand by themselves. Other signs are employed to represent common prefixes such as *dis* and *com,* common suffixes such as *ed, er* and *ing,* common letter combinations such as *ow, ou, in* and *en* and some common words such as *the, and, for* and *of.*

The use of contractions and short-forms greatly reduces the time involved in transcribing and reading the material, as well as the bulkiness of the finished volume. Today, therefore, this is the most commonly used grade of Braille. However, it is more difficult to learn grade-two Braille. Not only must one memorize all sixty-three different signs (most of which have more than one meaning, depending on how they are used), but also it is necessary to learn an involved set of rules governing when each sign can or cannot be used.

Grade-three is a highly abbreviated form of Braille, approaching true shorthand. There are a great number of contractions and short-forms to memorize and the rules governing their use are correspondingly difficult. Grade-three Braille often is employed in scientific notation or other highly technical material. Since very few blind persons are able to read this grade of Braille, it is not commonly used.

Braille has proved to be very adaptable as a medium of communication. When Louis Braille initially developed his touch reading system, he applied it to the notation of music. The method works so well that the reading and writing of music is easier for the blind than it is for persons having sight. Various mathematical, scientific and chemical terms have been successfully transcribed into Braille, opening vast storehouses of knowledge for blind readers. Watches with stout hands and embossed Braille figures have been designed so that deft fingers can feel what time it is.

Kingdom Message in Braille

One of the most important applications of Braille has been the conveying of the

"good news" of God's kingdom. (Matt. 24:14) Back in 1960, the Watch Tower Bible and Tract Society of Pennsylvania, a corporation used by Jehovah's Witnesses, began reproducing selected articles from their Biblical journal *The Watchtower* in grade-two English Braille. These were produced monthly, but in very limited quantities, since each copy had to be made by hand with a stylus. Over the years expanded and improved facilities have made possible an ever-increasing supply of Bible study aids in Braille. Today the Watch Tower Society still produces in Braille selected articles from *The Watchtower*. Currently there are over 1,000 subscribers around the world. A partner arrangement is in effect so that, for each copy produced, two subscribers share the magazine. Each subscriber is able to keep every other issue for personal use.

Additionally, the Watch Tower Society produces many books and booklets in Braille. These are provided on a loan basis. Available in grade-two English Braille are the following books: *The Truth That Leads to Eternal Life; True Peace and Security—From What Source?; Is This Life All There Is?; Listening to the Great Teacher; Is the Bible Really the Word of God?; Holy Spirit—The Force Behind the Coming New Order!;* and the songbook *"Singing and Accompanying Yourselves with Music in Your Hearts"* (words only). Also available in grade-two English Braille are the booklets *There Is Much More to Life!; Is There a God Who Cares?;* and *A Secure Future—How You Can Find It.* Additionally, the Watch Tower Society has produced the booklet *"This Good News of the Kingdom"* and the tract *Life in God's New Order* in grade-one Spanish Braille.

Sightless persons who desire to obtain on a loan basis any of the literature mentioned, or who wish to have their names added to the mailing list for selected *Watchtower* articles may do so by writing to the Watch Tower Society, Braille Desk, 117 Adams Street, Brooklyn, New York 11201. All Braille literature is free of charge.

This Braille literature has aided many blind persons to come to an accurate knowledge of their Creator, Jehovah God. As a result, they have seen the need of dedicating their lives to God and sharing with others what they have learned. This they have done despite their handicap. A witness of Jehovah in Puerto Rico regularly conducts Bible studies with others by means of Braille literature. She writes: "You should see how happy I look packing my book bag with the big bulky book and with my guide dog dragging me along the way. Jehovah is a loving and glorious God —so merciful, too, when he uses us to serve him no matter what handicaps we may have."

By means of Christian literature in Braille, men unable to see have been appointed to positions of responsibility within the Christian congregation. Though blind, they conduct congregational meetings, or read the paragraphs at the weekly study of *The Watchtower*. Some even give public Bible talks, using Braille notes.

Remarkable indeed—from the unyielding desire of a teen-age boy to communicate with the sighted world around him has come the versatile system we know today as Braille. New worlds of learning have been opened to the blind who have learned to read by touch. What a grand and happy day it will be when the prophetic words of Isaiah 35:5 are fulfilled in a literal way! Then "the eyes of the blind ones will be opened." But until that occurs they are blessed to be able to read about these precious promises with their fingers.

A STORY OF FAITH

from Northeastern India

HAVE you ever heard of "Tanghul Naga"? That is the name of my tribe. We live in the eastern hills of Manipur State, northeastern India, surrounded by Bangladesh, Burma and China.

This is an area of beautiful green hills and fertile valleys. Throughout the centuries we Nagas have developed into some twenty-nine tribes, each one with its own dialect, folk customs and styles of dress. Until recently Nagas were "uncivilized" headhunters who practiced animism, a religion involving worship of trees and stones. We would offer to such objects sacrifices of pigs and dogs.

Life in these parts is almost the same in every village. If you were to visit my location, you would see some twenty to forty small houses with floors and walls of mud. The roofs are thatched with thick layers of dry, wild grass. These homes are built alongside a few dusty, unpaved lanes. Each village has a ruling council of elders.

A person who picks his way along one of these lanes sees pigs, dogs and fowl freely roaming about. At the front of some houses hang human skulls. These are reminders of the grim past, when the tribes fought for supremacy.

Most of us tribespeople are self-sustaining. We raise domestic animals and cultivate the terraced hill slopes nearby. Our main crops are rice, maize, potatoes and ginger.

Interesting is the fact that women work right alongside men in clearing undergrowth and preparing the soil for cultivation. It is common to see women trudging to a village carrying heavy loads of vegetables and firewood in cane baskets. The baskets hang on their backs, supported by a broad band of cane around their foreheads. Besides this type of work and household chores, our women engage in fishing, weaving and selling at the market towns.

The dress of our hardworking women is simple, but in gay colors. A shawllike piece of cloth wrapped around the waist forms a skirt that extends just below the knees. Handwoven by our tribeswomen, these skirts are mostly of a bright-red col-

or, with horizontal stripes of white, black, green or yellow. A similar piece of material covers the upper body.

A New Religion

Now let me relate to you what I have called a story of faith. It began during my high-school days at Imphal, the principal town of Manipur. One morning two of Jehovah's Witnesses visited me at my lodging room. They spoke about the Bible and how God's kingdom will soon transform the whole earth into a beautiful paradise.

I liked their message, but quickly encountered opposition. The hostel warden tried to discourage me from studying the Bible with Jehovah's Witnesses, saying that they were "different" from other Christians. In spite of this, I sought out their meeting place in Imphal and began to study the Bible weekly with the Witnesses. After a while, though, I discontinued this study. I simply refused to believe that God's personal name was Jehovah, though the Witnesses had pointed out that the name occurs thousands of times in the Hebrew text of the Bible. —Ex. 6:3; Ps. 83:18; Isa. 12:2; 26:4, *Authorized Version.*

Then something unexpected happened, which brought about a change in my attitude. One day I was looking through the history textbook *An Outline of World Civilization,* by Dev Raj Dutt. On page 157, in the chapter entitled "Rise of Christianity," I read: "Jesus was a disturber of the *status quo* and was condemned as a blasphemer of Jehovah, God of the Jews." There, once again, was that name, "Jehovah." Were Jehovah's Witnesses right after all? I resumed my Bible studies.

Soon, I came upon something else that I found hard to believe. The Witnesses pointed out to me from the Bible that some of the customs of my church were of pagan origin. That seemed like too much to accept. I returned to my history book. On page 163, under the heading "The Christian Civilization Paganism," I read the following:

> "This Christian civilization did not spread over the West in one broad sweep. Nor did it bring a complete break with the Old Pagan Civilization. The new civilization grew up in the midst of the old Pagan world: it adopted even pagan ways which it could approve. Christianity did not so much destroy Pagan Culture, as modify it, and stamp it with its own character."

I was now convinced that Jehovah's Witnesses were telling the truth. On regular trips from Imphal to my village, I shared these newly learned Bible truths with my elder brother, who at that time was a Naga terrorist. Later my cousin, a village farmer, also joined our regular Bible discussions. Soon they, too, were convinced that Jehovah's Witnesses were teaching the truth.

Opposition Intensifies

Our Bible studies with the Witnesses became well known in the village. Local church leaders were displeased. During one church service, a visiting pastor accused Jehovah's Witnesses of being false prophets and witnesses of Satan. After the service, my brother and I, along with our cousin, visited him. We explained from the Bible the basis for our disagreement with church teaching. Unable to reason with us from the Word of God, he resorted to angry words. Our own village pastor, also present, asked sarcastically: "At which theological college did you study?" Soon after this, the three of us submitted written resignations from church membership.

Church authorities tried to get our father to withdraw financial aid from me; but

he refused to comply. Then the village elders formed a plan to extort 250 rupees (28 dollars) from us. If we did not pay, they threatened to expel us from the village, depriving us of home and livelihood. But, being aware that the constitution of India guarantees freedom of worship, I recommended that they lodge complaints against us in the law courts. This held them down to harmless threats.

Endurance Pays Off

The witness of Jehovah with whom I studied was very encouraging. He explained that what I was experiencing was quite common with persons who take up true worship. He pointed to the Scripture text at Mark 13:13: "And you will be objects of hatred by all people on account of my name. But he that has endured to the end is the one that will be saved." It occurred to me that many persons have sacrificed their lives for the sake of national sovereignties. How much more should I be prepared to die for the sake of the Supreme Sovereign of the whole universe!

The opposition continued. Several insisted that I was too young to understand the Bible, and that Jehovah's Witnesses were taking advantage of my youth. An uncle suggested that I first get a better education and become materially self-sufficient before becoming religious. But I resisted these materialistic temptations. Though still a high-school student, I dedicated my life to Jehovah and was baptized in February 1975.

Endurance for what I knew was right brought rich dividends. Soon afterward my brother and my cousin also were baptized. To raise money to attend the assembly for his baptism, my cousin sold his only possession—a buffalo that he used for plowing farmland. While I continued on at Imphal, eventually becoming a full-time evangelizer, my brother and my cousin returned to our village to spread Bible truth there.

The village elders kept up their opposition. They held a council *and* drew up the following resolution against us:

> that we pay a fine of fifty rupees (5.50 dollars) for changing our religion;
>
> that in case of failure to pay the fine, they destroy our homes and property;
>
> that no other witnesses of Jehovah should visit our village, and that anyone entertaining them would be fined;
>
> that if my father continued to give me financial aid, suitable action would be taken against him.

We had determined beforehand, however, not to bend in the face of such opposition. Happily, due to some disagreement among themselves, the elders were unable to enforce their threats. And endurance under this phase of opposition paid an even greater dividend. How so?

Since the three of us had become Jehovah's Witnesses, my father observed changes for the better in our lives. He also came to appreciate that the conduct of our church and village elders did not befit true Christians. To our delight, he too handed in a resignation from the church. My father now believes that Jehovah's Witnesses practice the truly Biblical religion.

How heartwarming to see our entire family regularly studying the Bible and putting its principles to work in our everyday lives! Above all, we are thankful to Jehovah that he saw fit to direct someone to our remote area. For us it was the beginning of a thrilling story of faith. —*Contributed.*

WHEN DISASTER STRIKES!

By "Awake!" correspondent in Australia

IT WAS 8:40 a.m. Tuesday, January 18, 1977. My wife and I were driving toward our next congregational assignment in Sydney, Australia. Suddenly, a police rescue squad, with sirens screaming, overtook and passed us at high speed. Within minutes ambulances and fire engines were coming from practically every side street to join the chorus of warning signals as they sped toward the scene of the worst rail disaster in Australia's history.

The train, filled with some 600 commuters, and with standing room only, left the rails on a long sweeping curve at the precise moment it passed under a bridge at Granville Station. It ripped into the steel stanchions supporting the bridge above. In seconds, a 200-ton section crashed onto two of the crowded carriages below. It descended with a sickening roar, squashing both carriages and their passengers into a space of just two feet (.6 meter). Adding to the scene of utter confusion and carnage, three cars came down with the overhead bridge.

City Brought Together

The tragedy brought the city together in an unprecedented way. Startled news commentators simply were out of breath, overcome by human emotion. Some were weeping as they observed the scene. Dr. Louis Kline of Sydney's Royal Prince Henry Hospital said: 'It was chaos . . . utter chaos! Everyone was working frantically. We went straight to the wreckage . . . Underneath it was one of the most horrible sights I've ever seen.'

At the scene, passengers clawed with their hands to help others trapped and injured. Painkillers, oxygen and blood were administered, and amputations were performed, on the spot. Rescuers bravely crawled under the fallen slab of concrete to give aid where possible and comfort to those who were dying. For some, rescue came; for others, it could never come. So swift was their death that they still held newspapers in their hands.

The Metropolitan Disaster Program, designed for just such a situation, functioned with speed and precision. Many businesses donated food and supplies. Hundreds offered accommodations and transportation for relatives of the victims, as they needed it. Holidays were offered to bereaved relatives or the injured, from motels up to 2,000 miles (3,219 kilometers) away. Darwin, a city devastated by a cyclone on December 25, 1974, and 3,000 miles (4,828 kilometers) distant, opened an appeal for the victims and their families.

In large cities, cooperation and willingness to become involved often are lacking. But on this day in Sydney, apathy was not the prevailing spirit. For thirty-one hours the horrifying rescue drama continued until the last of the dead was removed from the wreckage. Eighty-two persons finally were counted as dead, with over ninety others injured, some critically.

Our Preaching Work Affected

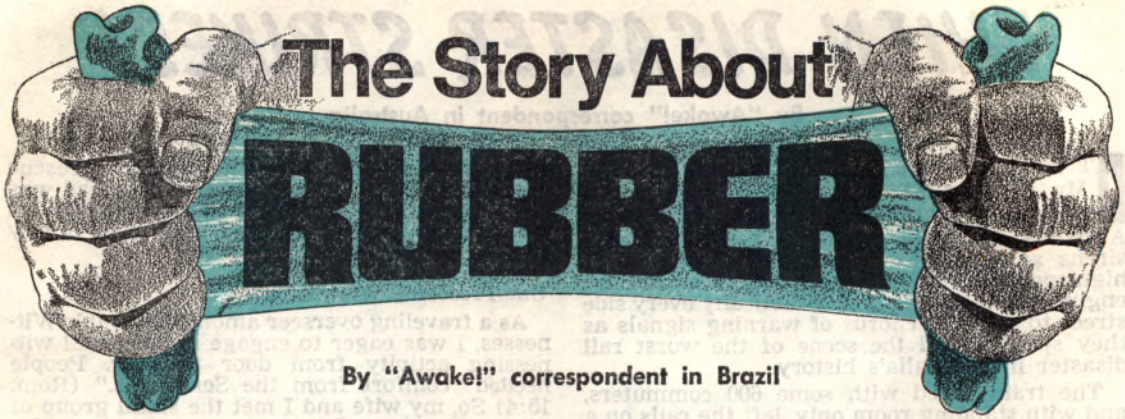
As a traveling overseer among Jehovah's Witnesses, I was eager to engage in our usual witnessing activity from door to door. People needed "comfort from the Scriptures." (Rom. 15:4) So, my wife and I met the small group of Witnesses assembled that morning in order to visit people of the district. Until then residents of that particular region had been indifferent to the Bible's Kingdom message, with its promise of better times, the abolition of death and the removal of sorrow. However, it was much different during our week-long stay.

Residents of Sydney were in a state of shock at the horror that had struck. Though the majority seemed to comfort themselves with the thought that "when your time comes, you have to go," the reality of death and the uncertainty of life became topics of immediate concern to many. Questions regarding these matters replaced former apathy and indifference.

In sharing the Bible's message from house to house, we referred to these words of Ecclesiastes 9:11, 12: "Time and unforeseen occurrence befall them all. For man also does not know his time. . . . the sons of men themselves are being ensnared at a calamitous time, when it falls upon them suddenly." But we also emphasized the Bible's promise of the time near at hand when "death will be no more, neither will mourning nor outcry nor pain be anymore." (Rev. 21:4) These Scriptural statements generated a great amount of interest among people who previously seemed to lack the desire to discuss anything spiritual.

Most associates privileged to make house-to-house calls during this memorable week left with householders numerous copies of the book *Good News—to Make You Happy*, published by the Watch Tower Society, which explains why mankind may have protection from such disasters in God's new order, now close at hand. Also, many thought-provoking Biblical discussions were had with the people.

How vital it is that we do not await a disaster in order to consider spiritual matters or to become actively concerned about our fellowman! The Bible warns of a rapidly approaching "great tribulation" of gigantic proportions. Those who now learn about that imminent calamity through Bible study can take steps to avoid the destruction it will bring.—Matt. 24:21.



The Story About RUBBER

By "Awake!" correspondent in Brazil

AN ENORMOUS jumbo jet approaches an airfield. For a successful landing —much depends upon the tires. They must bear tremendous shock and friction as the aircraft, with its immense weight, touches down and comes to a halt. The only natural substance that can take such a beating is rubber.

According to *Rubber,* a Firestone publication, world production for 1973 has been estimated at 3.25 million long tons* of natural rubber and 5.8 million long tons of man-made rubber. The major share goes to the automobile industry. "Automobile tires," notes the *Encyclopædia Britannica,* "absorb 60 to 70 percent of the available rubber."

Where does rubber originate? A number of tropical and subtropical trees produce a milklike fluid, or latex, containing rubber. The best commercial source for natural rubber is a straight, handsome tree called *Hevea brasiliensis,* native to Brazil's Amazon jungles. It grows wild to heights of 65 to 100 feet (20 to 30 meters). Cultivated on plantations, these trees attain a height of 60 feet (18 meters). As to the source of rubber-bearing latex, the *Encyclopædia Britannica* states:

> "The trunk of a tree may be divided roughly into an inner portion of wood and an outer portion of bark. At the junction of the bark and the wood is a layer of cells about the thickness of a sheet of paper, known as the cambium, which appears as a slimy layer when the bark is torn away from the tree. This layer is the seat of growth, on the one hand adding new cells to the wood and on the other new cells to the bark. Next to the cambium and in the soft portion of the bark are found the latex tubes. Outside the soft bark is a hard portion where there are comparatively few latex tubes. The whole is protected by an external layer of cork. The diameter of the latex tubes is considered to be about 0.0015 inch [0.0038 centimeter]."

Rubber molecules are composed of five carbon and eight hydrogen atoms. A large number of such molecules linked together form long, chainlike giant molecules known as *polymers* ("many parts"). Says *Rubber:* "Scientists believe that the chainlike make-up of rubber may explain its ability to stretch. They think the long chains of rubber molecules may link and twist, somewhat like coiled springs. When the rubber is stretched, the coils pull apart. When released, they go back into place."

Tapping Jungle Trees

Francisco da Silva is one of some 150,000 Brazilian family men who eke out a living by gathering natural wild rubber in the inhospitable forests near the Amazon

* A *long ton* equals 2,240 pounds (1,016 kilograms).

River. Francisco's daily routine starts at the crack of dawn near the jungle city of Rio Branco, Acre State, about 1,100 kilometers (680 miles) south of the equator. After a frugal breakfast, he sets out, carrying on his forehead a small lamp to illuminate the dense jungle. He also takes along a rifle to care for any dangers that might arise from wild animals or snakes.

Upon reaching the first tree, Francisco cleans the trunk. Then he uses a special knife to score the bark lightly, slanting the cut down from left to right. On each cut he places a tin cup. This serves to catch the milky juice that will ooze out from between the outside cork layer and the cambium during the next three to four hours. If a tree proves to be above average in producing, he puts up to four cups at the same level, about four inches (10 centimeters) apart.

Around noon Francisco stops to have a light meal. But soon afterward he begins collecting the latex. At about five p.m. he winds his way home with the day's yield of some 66 pounds (30 kilograms) of latex. This will make about 22 pounds (10 kilograms) of crude rubber.

The next operation takes place in a thatched hut with no windows but with an opening in the roof. In the middle of the hut there is a slow-burning fire, with a forked branch on either side. Several times Francisco dips a pole into the latex and then rests it on the forks. As he turns the pole above the fire, more latex is poured on the pole. The heat evaporates water from the latex, and the rubber thickens. The process of adding latex continues and gradually a dark, solid ball of rubber takes shape around the pole. This continues until the ball weighs 20 kilograms (44 pounds) or more.

Periodically the heavy balls of raw rubber are brought to an agent, where they are weighed, classified and paid for. Then they are shipped out to industrial centers.

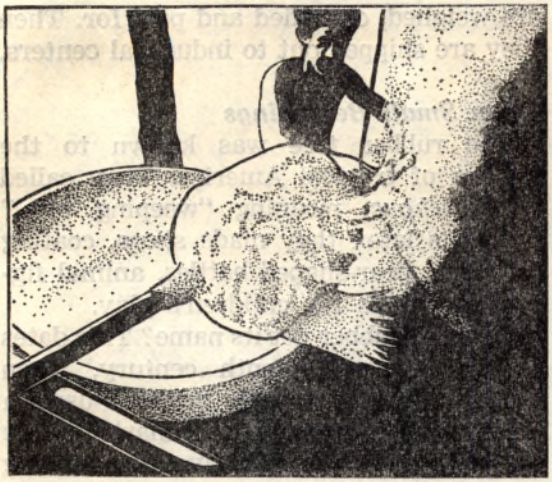
From Small Beginnings

The rubber tree was known to the Indians of tropical America. They called it *caoutchouc,* meaning "weeping tree." From its latex they made shoes, coating for cloth, pear-shaped bottles, animal figures and balls for children's play.

How did rubber get its name? This dates back to the eighteenth century, when British chemist Joseph Priestly used a piece of it to erase pencil marks. Since the substance was effective for rubbing out writing, what more apt name for it than "rubber"? This term has stuck.

It was in the nineteenth century that rubber appeared promising to commerce. At that time a Scottish manufacturing

Rubber gatherer scoring rubber tree. Latex oozes from tree and is caught in tinplate cup



Ball of wild rubber being made over smoke. The carbonic acid helps to coagulate the rubber

chemist, Charles Macintosh, applied the gum to cloth for waterproofing. From this came our raincoats, known by some as "mackintoshes."

Back then, however, uses of rubber were very limited. This was mainly because pure rubber is adversely affected by heat and cold. In warm weather it becomes sticky, smelly and perishes easily, whereas it hardens and becomes brittle in the cold. In 1839, however, an American, Charles Goodyear, found a way of coping with these weaknesses. How?

During experiments Goodyear hit upon the idea of adding sulphur and lead to crude rubber and heating this compound to high temperatures. The resulting gum lacked the defects of pure rubber and, moreover, showed higher elasticity and resistance to friction. The process became known as *vulcanization,* after the Roman god of fire, Vulcan.

This invention signaled a turning point in the manufacture of rubber goods. Another forward step was the invention of rubber tires, including air-filled tires, for automobiles and other vehicles. Thereafter the demand for rubber soared.

Rubber "Plantations"

On the crest of a "rubber rush," traders swarmed to the Amazon, and rubber barons amassed fortunes. Prices jumped to as much as a dollar a pound (454 grams). Manufacturers began to look for cheaper sources of rubber.

Hitherto, the sole supplier of crude rubber had been Brazil. Would it be possible to get rubber trees to flourish elsewhere? In 1876, Henry Wickham succeeded in taking to England about 70,000 seeds from Brazilian rubber trees. These were planted in greenhouses in the Royal Botanical Gardens at Kew, London. About 2,500 of the seeds germinated. The seedlings were rushed to Ceylon and Malaysia for replanting. With what result?

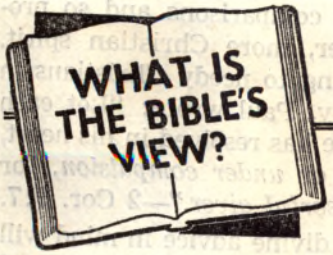
Nowadays, about 85 percent of the world's supply of natural rubber comes from southeast Asia, with Malaysia being the biggest producing area. There are also some rubber plantations in Africa, especially in Liberia and Nigeria.

Man-made Rubber

The heavy demand for rubber during two world wars led to the invention of synthetic rubbers from sources such as coal and petroleum. The term "synthetic" means "put together." Of these man-made products, some are better for certain uses than natural rubber.

Among the artificial rubbers are neoprene, which is particularly resistant to oil, gasoline, sunlight and ozone. "Arctic" rubber resists hardening and brittleness in cold weather. "Coral" by Firestone is said to be a virtual duplicate of natural rubber.

Rubber has been a constant servant of mankind for many years. It shows the wisdom and kindness of our Creator in furnishing the earth with an abundance of such natural resources that benefit mankind.



'Showering' With Gifts?

WHO does not enjoy receiving a gift, especially something needed? Yet is it not a richer joy to *give* a needed and well-received present? As Jesus said: "There is more happiness in giving than there is in receiving."—Acts 20:35.

Sometimes, however, questions or problems arise regarding gift-giving, particularly when a local custom is involved.

As an example of a local custom of gift-giving, in Australia some folks have the practice of holding a "shower tea" for a woman shortly before her wedding. In North America this is called a "wedding shower," and there are also "baby showers." Friends and relatives come together for an evening to enjoy association and refreshments and to "shower" the woman, or couple, with gifts that are to help in facing the new circumstances of setting up a household or the arrival of a new baby.

Perhaps where you live "showers" are not the custom, but it may be the practice to bring flowers or fruit when you visit a friend in the hospital or when you are invited to someone's home for dinner. How do you feel about gift-giving in these situations?

Wise Counsel from God

The Bible contains much encouragement toward generosity. We read: "The generous soul will itself be made fat, and the one freely watering others will himself also be freely watered." "He that is kindly in eye will be blessed, for he has given of his food to the lowly one." (Prov. 11:25; 22:9) John the Baptist advised: "Let the man that has two undergarments share with the man that has none." And Jesus urged: "Practice giving, and people will give to you. . . . For with the measure that you are measuring out, they will measure out to you in return."—Luke 3:11; 6:38.

It is not Scripturally wrong modestly to identify oneself as the giver of a present, if one chooses to do so, perhaps in an accompanying note. (Compare James 1:17.) But with regard to gift-giving Jehovah gives counsel that takes into account human imperfection. For instance, there is the danger of giving a present so as to bring glory to the giver. Jesus thus advised: "When you go making gifts of mercy, do not blow a trumpet ahead of you, . . . do not let your left hand know what your right is doing, that your gifts of mercy may be in secret; then your Father who is looking on in secret will repay you." (Matt. 6:2-4) How wise and kind! If the identity of the giver is to be announced publicly, one may be tempted to give beyond one's means, perhaps in order to match the value of the gifts of others. How true is the proverb: "There exists the one that is pretending to be rich and yet he has nothing at all."—Prov. 13:7.

Also, the Bible does not recommend generosity or gift-giving that would encourage laziness. It says: "Make it your aim to . . . work with your hands," for "if anyone does not want to work, neither let him eat." The apostle Paul explained that he personally labored 'so as to avoid putting an expensive burden on others.'—1 Thess. 4:11; 2 Thess. 3:8-12; Eph. 4:28.

"Showers" and Other Gift-giving

If an expectant mother or soon-to-be-married couple definitely is in need, you can appreciate how it might be kind and thoughtful to give gifts that will make the adjustment easier. Sad to say, sometimes persons stage "showers" for quite a different reason. For example, one woman wrote to a newspaper columnist concerning a "shower" that had been held for her fleshly sister. Regarding one of the twenty guests who attended, she said:

> "We checked and double-checked each gift and card and couldn't find a thing from this woman. She deliberately came empty-handed, . . . We were all shocked."

The newspaper columnist replied in part:

> "I've received hundreds of letters from women who say they have been invited to as many as four or five showers for the same bride. They view the whole shower scene as a gigantic ripoff, and I must say, your letter lends a great deal of validity to their complaints."

Yes, though a "shower" can be a nice opportunity for association, refreshments and gift-giving, it can also become a mockery of the Christian spirit of generous giving. What a pity it would be if persons concluded that their presents were more important than their presence! The error of putting all the emphasis on gifts can be appreciated when we realize that someone who is invited might not be able to afford a gift or might plan to give something at the wedding or after the child is born.

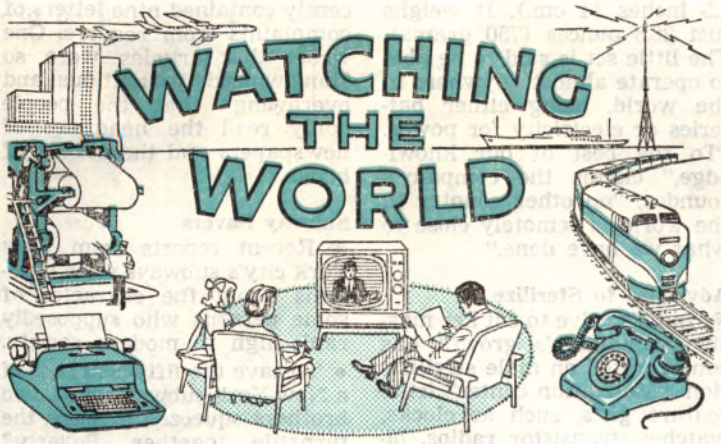
At some "showers" the giver of each present is identified before the others present. This can embarrass anyone who has not brought a gift. And it can lead to comparisons of presents from those of little means and those who are rich (or pretending to be so). (Jas. 2:1-9) How much better is it not to identify the givers by name! Following Jesus' counsel against publicizing the giver kindly avoids embarrassment or comparisons and so promotes a happier, more Christian spirit. Concerning giving to needy Christians in the first century, Paul wrote: "Let each one do just as he has resolved in his heart, *not grudgingly* or *under compulsion,* for God loves *a cheerful giver.*"—2 Cor. 9:7.

Keeping that divine advice in mind will help to prevent any ill feeling toward someone who does not bring a gift—be it to a "shower," when visiting patients in the hospital, when coming for a meal or at any other time when local custom may involve a gift. How much better it is to let a present be an expression of 'love without hypocrisy' rather than a mere formalism because of some local custom! —Rom. 12:9, 13.

Nor, when our motives are guided by God's Word, need there be any sense of competition. If you were in the hospital, would you not appreciate a single daisy or an orange brought by someone lovingly interested in you more than a bouquet of orchids or a case of fancy fruit given by someone out of "duty"?—Prov. 15:17; 28:6.

Similarly, there is no need for anyone to feel that he must give an "equal" gift in return for something received. One woman explained that when a friend came to her home for a meal and brought 'a bracelet and earring set, a box of chocolates and a bottle of champagne,' she felt that she would have to equal that in going to that person's home for a meal. But why should she? Individuals' circumstances differ. Even if they did not, is it not the sentiment that is truly important? We see this in Jesus' commending the poor woman whose gift to God was only two small coins.—Luke 21:1-4.

When our gift-giving and our thinking are in harmony with such perfect counsel of God, truly it is a basis for happiness—for both the giver and the recipient.



Forked Tongue

◈ Greek Orthodox Patriarch Dimitrios pledged in his "Christmas message" to 'help make 1977 a year of worldwide religious freedom and tolerance,' reports the Athens *Daily Post*. However, the patriarch went on to say that 1977 would also be 'especially a year of struggle against religious fanaticism,' the label his church puts on religious groups that they dislike. Was Greek Orthodox "tolerance" being displayed by the numerous attempts its clerics made to stop the peaceful assemblies of Jehovah's Witnesses in 1976? The metropolitan of Monemvasia and Sparta, Ieronymus, decreed excommunication for merely "rendering services" to the Witnesses.

Pole Play

◈ To enliven their lonely winter vigil at the U.S. Antarctic station located near the South Pole, some twenty scientists and others stationed there have created an unusual "300 Club." According to *U.S. News & World Report* magazine, "you sit in a sauna bath at 250 degrees [121 degrees Celsius], then run around the South Pole marker naked in minus-50-degree [-46-degree Celsius] temperature. The 250 and the 50 add up to 300."

Pirate's Return

◈ "How can I tell my home office we lost a fourth of our shipment to a bunch of pirates?" complained a shipping official in Nigeria. "They'd call me back for psychiatric consultation!" But he was not having delusions. The government has recently vowed to take strong action against "the incidence of sea piracy" in its coastal waters. Speeding in on motorized dugout canoes, bands of twenty-five to thirty chanting, cutlass-brandishing criminals have attacked freighters waiting for berths at Nigeria's major ports. Looted cargoes are quickly on sale in local shops and on the street.

America the First?

◈ A recent World Bank study may disillusion those who believe that the United States has the best of everything. According to the study, it does remain first among the nations in such dubious areas as violent crime, divorce and consumption of liquor and tobacco. However, in matters such as infant mortality, it is twenty-first, with 16.6 deaths per 1,000 births, while Sweden has only 9.6. The U.S. has dropped to sixth place in per capita annual income, behind Sweden, Switzerland and three oil-producing states. Newspaper circulation (300 per 1,000 people) is well behind Sweden (564 per 1,000) and at least five other countries.

Better Babies?

◈ "Breast-fed infants born with thyroid deficiencies tend to grow faster, have higher intelligence, and show better bone maturation than formula-fed babies," notes a report in *Medical World News*. "Breast milk seems to 'medicate' infants with congenital hypothyroidism."—February 7, 1977, p. 27.

• In a study comparing over 1,000 women who gave birth at home with the same number of hospital births, a Wisconsin physician found that "the hospital group suffered more birth injury (30 versus 0 instances) and more neonatal infection (8 versus 2) and more often required oxygen (93 versus 13 instances). Only one home-delivered full-term infant suffered respiratory distress lasting more than 12 hours, while 17 hospital-born infants did." —*Medical Tribune*, January 26, 1977, p. 23.

• A recent study by the French National Center for Scientific Research indicates that babies born in the peaceful, darkened, quiet atmosphere recommended by French obstetrician Frederick Leboyer continued to benefit as they grew up. (See *Awake!*, October 8, 1975, p. 30.) The babies "walked sooner than average, were unusually adept with their hands, and had minimal trouble with toilet-training and learning to feed themselves," notes a New York *Times* summary. A French psychologist remarked that they showed a "markedly greater precocity of interest in the world and in people than other babies do."

Watching the Animals

◈ What animals attract the most tourist attention in Africa's game parks? "The way it

breaks up on average," says a scientist studying the matter, "is that for each two-hour game drive in [Kenya's Amboselli game] park, the tourists spend eight to 12 minutes for lion and cheetah, three to four minutes on elephant and rhino, two minutes for giraffe and buffalo and a minute for zebra and antelope." Conservationists sponsoring the study argue that keeping land for game parks and tourism is more economically rewarding than using it for farming, grazing or industry.

Soft Sell

◈ According to a report from Moscow, the hard-sell advertising so common in the Western world is not part of Soviet sales technique—yet. "There is something charmingly innocent about Soviet advertising," writes New York *Times* correspondent David K. Shipler. "The Russians appear to be under the impression that sheer information can persuade people to buy things." Ads on Soviet television appear only once every few nights in fifteen-minute blocs, he says. A photo of several vacuum cleaners may appear, for example, with the sales pitch: "Vacuum cleaners can be bought at electrical appliance shops."

Cow Care

◈ A British agricultural scientist says that a four-year study reveals that cows respond liberally to farmers who care. He reports that farmers who talk and sing to their cows, pat them and otherwise take an interest in the animals may obtain as much as 10 percent more milk from the contented creatures.

Tiny TV

◈ The pocket calculator must now make room for a "pocket-size" TV set. Britain's Sinclair Radionics company's "Microvision" set has a 2-inch (5 cm.) screen and measures 6 inches (15 cm.) x 4 inches (10 cm.) x 1.5 inches (4 cm.). It weighs just 26.5 ounces (750 grams). The little set is said to be able to operate almost anywhere in the world, using either batteries or electricity for power. "To the best of our knowledge," claims the company's founder, "no other country in the world is remotely close to what we have done."

Advertise to Sterilize

◈ India's drive to cut her massive population's growth has concentrated on male sterilization. "Motivation center" tents feature gifts, such as clocks, watches, transistor radios, bicycles and other items to persuade the candidates. The centers "look like American savings banks offering premiums," noted one observer. "Incentives" in the "voluntary" program may also include cash, while "disincentives" to parents with three or more children may include withholding ration cards or even refusing medical care to children of parents who fail to cooperate with the program.

Whale of a Ride

◈ A pair of large beaked whales were found having difficulty in New Zealand's Napier harbor. Wearing wet suits and flippers, a marine animal trainer and his companion helped to get the pregnant female off some rocks. Then, after a few minutes, the trainer "climbed on the male's back and leaned over and stroked the female." Once he got them facing the harbor entrance, he dismounted and watched them slowly head for the open sea.

Fog Clearing?

◈ Millions of Chinese used to flowery, political newspaper articles that are long on words and short on information are in for a change, according to the Communist Party newspaper *Jenmin Jih Pao* (*People's Daily*). To inaugurate the new policy, the front page recently contained nine letters of complaints from readers. One wrote that articles were so "long-winded, pretentious and overawing" that the people "only read the headlines of newspapers and the covers of books."

Subway Savers

◈ Recent reports from New York city's subways raise questions about the character of some persons who supposedly rank high in modern society.

• To save the fifty-cent cost of a New York subway token, two brothers squeezed through the turnstile together. Poverty? Hardly. Police learned that one was a wealthy diamond dealer with more than $30,000 in his pocket. The other had more tokens. "I don't know why I did it," said the man with the money.

• Others use metal slugs instead of tokens to save the fare. "In a month, antislug [detectives] netted a vice-president of [the largest American oil company], a [famous university] professor, a chemist, and a writer from [the best-known news magazine]," reports *New York* magazine.

Pampered Rats

◈ Under the headline "Religious Beliefs Hinder Rodent Control Campaign," the *Times of India* reports that grain merchants in Bombay "are obstructing municipal officials." The same Hindu religious belief in reincarnation that keeps Indians from killing cattle for food also protects the rats, which destroy vast quantities of grain in this hungry land. The *Times* noted that one official had told of rattraps' being frequently tampered with and of once catching a trader "red-handed in the act of kicking open a trap and letting the rats loose."

Enforcement with Teeth

◈ Greek soccer fans will have to curb their emotions or face

enforcement with teeth, according to a recent United Press International report. "A government spokesman said the cabinet has approved the purchase abroad of German shepherd dogs," notes the report, "specially trained to deal with unruly fans." Sports disturbances in Athens and several other towns inspired the government decision to "bite down" on the problem.

India's Movies

◈ The editor of *The Illustrated Weekly* of India reports that in 1975 his country produced more films than any other nation, over 470 in 13 languages. There are about 300 film magazines published there, said to be more than the rest of the world combined. The 8,500 cinema houses in the country take in more than $244 million annually from millions who have little else in the way of entertainment. An Indian film critic, Bikram Singh, recently wrote of the films: "We produce the most and we produce the worst."

"Blessing the Tanks"

◈ Catholic news columnist Garry Wills recently commented on the former close cooperation with the military by Catholic Relief Services in Vietnam. He wrote that "Catholics are the most reliable recruits in America's cold war." But he notes that "it hurt both our politics and our religion to fuse them in a bellicose piety that makes our military force the arm of God." Wills also observes that the chaplain's corps brought Catholics and Protestants in America into "a unity around the act of killing. . . . The priests are still blessing the tanks."

"Hearing Dogs"

◈ Blind persons have benefited for years from the Seeing Eye dog program. Now the American Humane Association (AHA) is training "hearing dogs" to help the deaf. The training program is said to be less extensive and, hence, less expensive than that for Seeing Eye dogs. "The first priority is to train dogs to respond to alarm clocks and smoke alarms," says an AHA official. They also respond to most other sounds to which a hearing person reacts. Then a "hearing dog" will nudge its master, run to the sound source and run back again.