

Awake!

You Are

AN ENGINEERING MARVEL

ALSO IN THIS ISSUE:

What Future for Africans?



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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.

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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.

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You Are AN ENGINEERING MARVEL



FROM a completely objective viewpoint, the human body is the most marvelous structure we know of.' 'It is a masterpiece of engineering.' "The daily pounding to which bones and muscles are subjected is so great that it would cause some machines to wear out after only a few years." These are descriptions given by persons who have made a careful study of the human body.

Engineers see to it that bridges, tunnels, buildings and the like will be able to withstand far more than the usual stresses to which they will be subjected. The strength that is beyond what would ordinarily be sufficient provides a margin of safety. To be described as an "engineering marvel," the human body should, therefore, have extraordinary safety factors. Does it?

Safety Features

Most of the blood chemicals are in a delicate balance. But there is still a rather wide built-in margin of safety. For example, the blood-sugar level is considered "normal" if present in amounts of 80 to 120 milligrams per 100 cubic centimeters of blood. However, the blood-sugar level can drop considerably without giving rise to serious problems. Not until it plunges to about half normal, or below about 50 milligrams per 100 cubic centimeters, will the person experience ill effects.

The heart is capable of doubling its rate of contraction, pumping out about double the volume of blood. At the same time, the arterial blood pressure may increase by

30 or 40 percent. Yet, unless previously damaged, the heart is able to take on this extra load without any difficulty.

The volume of oxygen transported in the bloodstream from the lungs is three and a half times as great as is generally used by the tissues. Because of this, one lung may cease functioning, or be completely removed surgically, and yet life can continue with reasonably normal respiratory efficiency.

Astounding, too, is the body's ability to endure surgical removal of vital organs. For example, one kidney may be removed without severely endangering a person's life. With only about half a kidney remaining, a person may continue to live without being plagued by serious kidney troubles.

Within less than two days, the person losing both of his adrenal glands would die. Yet, with only a tenth of the adrenal tissue remaining, he can continue living.

Doctors have cut away large sections of the brain without endangering the patient's life or seriously affecting mental and physical functions. The brain is also well protected from injury by the hard skull.

Other organs can likewise continue their essential functions when large sections are removed surgically. A person may get along with one fifth of his pancreas or one fourth of his liver. Most of his stomach may be removed without dangerously af-

fecting digestion and nutrition. Total removal of the stomach is crippling, but not fatal. About half of the small intestines and most of the large intestines may be cut away and still the person continues to live.

The body has a marvelous defense system against disease. Although alive with bacteria, the skin provides a protective shield for the whole body against their encroachment. If harmful bacteria enter the body through a cut or scratch, the body's defense system goes to work. White blood cells rush to the area and start destroying the invading organisms.

The lymph nodes serve as yet another part of the defense system. Whenever disease organisms enter the body, the lymph nodes manufacture antibodies to combat the invaders. Antibodies vary according to the kind of organism infecting the body. Some antibodies fight disease organisms directly. Others render harmless the poisons released by the bacteria. Still others cause the bacteria to stick together so that white blood cells can destroy them more readily.

Being elastic, the skin also permits the effects of a fall or a blow to be spread over a large area and thus reduces the extent of the injury.

Truly your body is well designed, with an ample margin of safety.

Waterproof Insulation and Heat Control

Besides protecting the body from the invasion of disease organisms and minimizing the effect of blows or falls, the skin serves to provide a waterproof covering for the body. Were it not for this feature, a walk in the rain or a bath would be hazardous. Our bodies would swell and our blood would be diluted. Swimming in seawater would result in shrinkage, since, from a chemical standpoint, salt water is more concentrated than blood.

The release of water through the skin in the form of perspiration and by diffusion, on the other hand, is essential in maintaining the body's heat balance. Even hair growing in the skin has its place in heat control. The hair of the head shields the brain from getting overheated when subjected to the hot sun. On the palms of the hands, the fingers and the soles of the feet, the thick skin functions as a good heat insulator.

Dry skin also serves as a fine electrical insulator. This is indeed a blessing at a time when electrical appliances have come into common use.

Surely, something as attractive and versatile as human skin can rightly be labeled an "engineering marvel."

The Framework

The bones provide the structural framework, keeping the organs in place and preserving the shape of the body. In themselves, the bones are an engineering marvel.

Having a total weight of some twenty pounds, a man's bones provide an ideal combination of lightness and strength. No human engineer can design a framework that can accommodate continual growth for some twenty years without having to shut down the structure that this framework supports. Bones, however, grow along with the rest of the body without as much as one stoppage in a person's activities.

Another feature of body engineering that man cannot duplicate is self-repair. A broken bone, when properly treated, will heal and can thereafter function just as well as it did before the break occurred. Furthermore, bones fit together freely, connected by self-lubricating joints. Interestingly, so-called self-lubricating systems in automobiles are but a recent engineering development.

Versatility

The capacity of the human body simply staggers the imagination. Think of man's accomplishments in the fields of architecture, building, music, sports, carving, sculpture, painting and technology. The hands that firmly grasp an ax to chop down a tree can guide a knife in carving an object of beauty or move the scalpel to make minute surgical incisions. The legs and feet that are used for walking serve just as well for running, jumping and climbing. What single machine could come close to duplicating even a few of the many movements and activities of the human body?

Amazing, too, is the fact that the fuel for all the many functions of the body can be derived from, not just one, but many sources. And the greatly varied fruits, vegetables and meat that may be eaten to supply the body's needs add to the enjoyment of life.

Yes, when we consider just a few things about the marvelous human body, we cannot help but be impressed. Calling it an "engineering marvel" is no exaggeration. Rightly we can express ourselves in the words of the ancient songwriter: "In a fear-inspiring way I am wonderfully made. [God's] works are wonderful, as my soul is very well aware."—Ps. 139:14.

What Future for Africans?

By "Awake!" correspondent
in Liberia

THE world today is constantly changing, and nowhere is this change more rapid or profound than on our continent, Africa. In the past fifteen years we have seen dozens of new nations arise as colonial empires disintegrated. What is the motto of these new African nations? *Development!* Accordingly, in many parts of Africa agriculture is giving way to industry. Many of us have left village life to seek employment in growing cities. We have seen tribal cultures and values dissolve in these urban melting pots.

In view of these changes, many of us ask, "What will the future hold for Africa



and Africans? Should we continue to imitate the industrial nations of the Western world, or should Africans strive to maintain age-old traditions?"

The reason that these questions arise is that when some of us went abroad to study, we had opportunity to taste the life of material plenty, comfort and leisure enjoyed by people of the "first world." Others of my fellow Africans were exposed to these luxuries through movies or by observing persons from other parts of the world who are working here. The reaction of many of us was: "We want these things too!"

Some have achieved them. From almost every village some young man has suc-

ceeded in the struggle to obtain a high school education, earned a scholarship to study abroad, and returned to a prestigious, high-paying job. Now these individuals have become part of the elite and they enjoy the affluent way of life typical of Americans and Europeans. But for every one who has succeeded, there are a dozen who have failed.

Sadly, for many this results in a desire to escape their frustration through alcohol, sexual immorality and, more recently, drugs. All too often money sorely needed to feed and clothe families is squandered on these excesses. Thus African cities teem with youths endeavoring to eke out a living—often by crime.

Observing these problems firsthand makes some of us ask: "Will pursuit of an industrial way of life on this continent result in a secure and peaceful future for Africans?"

Can We Succeed Industrially?

First of all, if industrial development of Africa is to succeed, we will have to solve many challenging problems. African nations are striving to achieve in a few years what it took Western nations centuries to accomplish. Even with the benefit of sharing in their knowledge and experience, it will be difficult to catch up.

One serious problem is that of locating sufficient competent personnel. In many areas there is a surplus of clerks, but a critical shortage of technicians. Technical schools are desperately needed, but where will we find qualified instructors and money to buy necessary equipment? Further complicating matters is the fact that many Africans who go abroad to study stay there. Also, the hot climate and many parasitic diseases often sap our strength, making necessary a slower pace.

Other factors that may inhibit progress are tribalism and selfishness. Our tribal

laws prohibit lying, stealing and murder *within our own tribes*, but generally do not apply in our dealings with members of other tribes. These other people may be viewed as potential enemies. Living in cities together with people from many tribes requires a new set of values. Where will these come from? The rapid transformation of our perspective from a tribal to a national and worldwide one has resulted in considerable instability and disorder.

Additionally, population growth and inflation consume most of the benefits of development, so that the average African is not much better off than before. Traditionally, we have desired large families to help with farm work, to care for us in old age, and to ensure that our name is carried on. But things are different in an urban society. Simply providing the basic education essential for that type of life can be a financial burden to those with large families. With the population shifting to cities and the emphasis on industry, agriculture has been unable to keep pace with population growth. This, coupled with increased demand for Western consumer goods, has fanned the flames of inflation.

What Future from Industry?

But what if we overcame all these problems, and if Africa succeeded in developing industrially? Would that guarantee a peaceful, secure future for us?

Well, how has it affected the Western nations? True, the industrialization of the "first world" nations has produced material abundance for many. But do not others within their boundaries still suffer from poverty and unemployment? The high rate of crime, divorce, drug addiction, suicide and similar social ills in those nations does not commend the "leisure life" as a genuinely happy one.

Medical advances in the Western world have cut down cholera, malaria and worm

infections. However, in their place have sprouted up cancer and heart disease nurtured by the stress, pollution and eating habits prevalent in those nations. Moreover, the economies of industrial nations are *shaky*.

But where else is there to turn? Few Africans wish to revert to subsistence agriculture and tribal superstitions. On the other hand, we do not want our culture and customs to be swallowed up totally by materialistic Western ways. What we *do* want is to retain the beneficial aspects of African culture, to improve the quality of our lives, and to find stable moral values to guide us in these critical times.

Can the Bible Help Africans?

Can the Bible help us? Many Africans doubt that it can. Why? Because Christendom's missionaries who spread the Bible throughout Africa spearheaded the way for its colonization and commercial exploitation by Western nations. Those missionaries, administrators and businessmen imported Western culture. But they did not provide sound moral guidance for Africans. The failure of Christendom, however, does not mean the failure of the Holy Scriptures. The Bible both foretold and condemned the greedy materialism, conceit and love of pleasure that exist in the world empire of false religion, Babylon the Great, of which Christendom is the largest part.—2 Tim. 3:1-5; Rev. 18:2, 4-8.

Furthermore, the Word of God depicts that false religious empire as a "harlot" who has committed fornication spiritually by mingling religion with politics. (Rev. 17:1-5, 15, 18) She is responsible, not only for permitting and encouraging the spiritism (such as juju and African science) and superstition that have enslaved Africans, but also for much political and commercial exploitation of them. (Rev. 18:3, 23) According to the Bible, execution of

God's judgment upon Babylon the Great approaches rapidly. God's liberating call urgently rings forth: "Get out of her, my people"!—Rev. 18:4.

Thus the doubts of my fellow Africans as to whether the Bible can assure them a secure future are ill founded. The Scriptures actually condemn Christendom for the mistreatment that she has meted out to people throughout the world, including Africa. Moreover, the Word of God contains time-tested principles for a happy life now and sure promises of a future of peace and security for all mankind. Obedience to these principles has resulted in great numbers of Africans abandoning polygamy, with its many problems, to build clean, happy families through a loving monogamous marriage arrangement.

I know what I am talking about, for I am one of Jehovah's Christian witnesses. I associate with hundreds of thousands of other Witnesses right here in Africa, persons who have made remarkable transformations in their personalities in order to harmonize their lives with Bible principles. We sincerely call one another brother and sister, for we have forsaken Christendom's churches and discontinued traditional spiritistic practices. As to the effect Bible principles have on our lives, Oxford sociologist Bryan R. Wilson writes in an article entitled "Jehovah's Witnesses in Kenya":

"[They] do inculcate a very rigorous ethic of personal integrity [and] its effects are perhaps more impressive than the formal codes and inconsequential rhetoric of churches . . . In insisting on punctuality, honesty, sobriety, good appearance and scrupulous dealings, for instance, they inculcate dispositions which have consequences both for work and civic involvement. In refusing to take bribes, an African Jehovah's Witness manifests a standard of behavior quite uncommon in African countries."

As for political rivalries, Jehovah's Witnesses order their lives according to Jesus'

statement that his followers would be "no part of the world." (John 15:19, 20) We remain absolutely neutral with regard to this world's politics. Here in Africa this has brought terrible persecution upon tens of thousands of us, even death in some cases. But we cannot break our neutrality, for we know from the Bible that a secure future can come only through God's heavenly kingdom. This will soon remove all human kingdoms and cause divine rule to spread earth wide.—Dan. 2:34, 44.

That heavenly government will unite all mankind under one Head, Jesus Christ. It will restore this earth to a paradise and

uplift mankind to perfection. Gone will be sickness, crime, violence, even death. (Rev. 21:1-5) Among those who will enjoy that happy future will be billions of the dead, who will return to life in a resurrection. (John 5:28, 29; Acts 24:15) Then, by putting the worship of Jehovah God and the principles of his written Word first in their lives, people of all races and cultural backgrounds will continually improve the quality of life on earth. This is the future that the more than 300,000 of Jehovah's Witnesses in Africa eagerly anticipate. In fact, it is the *only* hope for the future of Africans and of all mankind.

The Independence of the Transkei

● In the latter part of October 1976, crowds gathered at Umtata, the capital of the Transkei, for celebrations and ceremonies. At midnight of October 25, to the salute of 101 guns, the South African flag was lowered for the last time and the new Transkei flag was unfurled. The Transkei had officially become Africa's fiftieth independent state. It is the first of South Africa's "homelands" (large territories set aside for each African tribe) to achieve that distinction.

Located in the southeastern part of South Africa, the Transkei is about the size of Denmark (44,000 square kilometers or almost 17,000 square miles) with a population of about 1½ million, including some 10,000 whites. Most of the country's blacks speak Xhosa (related to Zulu) but belong to various tribal groups, such as the Mpondo, Tembu, Bomvana and Fingo. The land is fairly fertile and well watered. Its southern boundary is the Great Kei River, whence the name "Transkei."

Xhosa-speaking tribesmen have been established in the territory since about the fifteenth century. In the eighteenth century conflict developed between black tribesmen and white farmers, resulting in a long series of wars. Finally, in the late nineteenth century the whites predominated and the British government annexed the territory to the Cape Colony. Since 1910 the Transkei has formed part of first the Union of South Africa and then the Republic.

Following the evolution of South Africa's policy of separate development, partial self-government was granted in 1963. The Parliament has 150 members, including 75 traditional chiefs and 75 elected members. In a recent election Paramount Chief Kaiser Matanzima's party won by an overwhelming majority. He is now the country's leader or prime minister. The new country will follow a policy of nonracialism; there will be no segregation. But economically it will be very dependent on South Africa. Recently the U.N. voted against recognition of the Transkei, and to date no country except South Africa has recognized the new state.



SHE TALKS TO PASSERSBY

By "Awake!" correspondent in Canada

PERHAPS you have seen persons on the street offering *The Watchtower* and *Awake!* and have wondered why they were there. Have you ever stopped to find out?

A reporter in Trois Rivières, Quebec, Canada, noted the zealous, all-weather service of a teen-age girl, one of Jehovah's Witnesses. He interviewed her, and his feature article "She Talks Only About the Kingdom of God" appeared in the French-language newspaper *Le Nouvelliste*. This is what the reporter wrote:

"Age seventeen, a serene face rain or shine, warm or cold, you see [Sandra] one place or another in the city of Trois-Rivières. Perhaps one day it will be downtown, the next over in Notre Dame at

St-Maurice and Laviolette. But wherever it is, she's talking about God's kingdom . . .

"I saw her several times at that intersection, [magazines] in hand, calmly mingling among the passersby, and I finally went and talked to her. . . . Everything she says is based on the Bible. Whatever question I raised on whatever subject, she opened up the good book and pointed out such and such a passage as she answered.

"Sandra works, but only part time. She needs all her mornings to go talk to people. In the afternoon she does secretarial work as a means of making a living and in the morning she shares the good news in God's Word with others. . . .

"Do the passersby go to her? Not at all. Actually it's just the opposite. After she catches someone's attention, she can discuss pretty well anything, but first and foremost she points to the one solution to all this mess around us: the Kingdom of God.

"People are all mixed up; they don't know where to turn, Sandra said, adding what I already knew: 'The world is filled with cruelty. Nations rising against nations, kingdoms against kingdoms . . . the end is near!'

"At this point, without thinking, I uttered the expression 'the end of the world.' Fortunately this made her state that I was wrong. All these signs, she said, are mentioned in the Bible and show that the end is near, not the end of the world, but

most surely the sweeping away of wickedness.

"In some ways, Sandra explained, it will be like the events surrounding the survival of Noah. 'Only those who obeyed God were saved then, and it will be the same again for those who live now, according to the Bible.'

"So it is not a matter of the end of the world but of the end of a system of wickedness, it being replaced by goodness,' explained Sandra.

"And that time is getting close, she added, for the signs given in the Bible (cruelty of people, wars, etc.) are especially evident since the first World War . . . Here she showed me again in her Bible where it is clearly written that the generation that saw these signs would not pass away before wickedness was erased . . . In this case, the generation would count from the war of 1914.

"Getting back into the present time, putting predictions aside, Sandra and I talked about their particular practices. Tobacco—they won't touch it, since it goes against the Bible's counsel: 'You shall keep your body clean.'

"What about alcohol? It's OK, she said unhesitatingly, but not like some who go in overboard for it. Moderately, in other words. As it should be taken. What about dating and sex? Well, that's easy. Just like at the beginning, Sandra showed me the Bible and made me understand that sex should be confined only to marriage. 'You will become one flesh,' my interviewee pointed out.

"Besides that, dating, during which time all this is forbidden, should only be engaged in with marriage in view. 'Dating is not for recreation,' in other words. And after that, that is, after marriage . . . the Witnesses can have children. Of course, because the marriage mates become one flesh . . .

"Our time is up and now I must leave my guest.

"One last question:

"—Who are the people with whom you can talk the most?

"Young people, certainly. In their case more so than others, one could say they have no purpose. They are searching for themselves. Hence they are more inclined to take in information, to want to know what the truth is.

"Tomorrow perhaps you will see Sandra Bouchard somewhere in Trois-Rivières. Unless of course a torrential downpour or an all-out blizzard strikes, because in any other weather she returns every morning, as serene as she was when I first met her and anxious to talk with the passersby."

The response of the people to this article was very good. For example, at the Westinghouse plant, where Sandra's father works, the employees pinned it up on the bulletin board. Many of them came and spoke to him appreciatively. Some young people, who are studying the Bible with Jehovah's Witnesses, had been experiencing pressure from their parents to stop. However, after reading the article, the parents now let their youngsters go to the Kingdom Hall to receive the fine Christian education offered there.

Afterward, as Sandra continued her preaching activity on the streets, the attitude of the people changed. Many now approached her, and even a person driving by in a car stopped to get *The Watchtower* and *Awake!*

A few months before, during the summer, Sandra had started a home Bible study with a sixty-year-old woman. The husband, however, did not sit in on the study. But after reading the article, he joined his wife in the Bible discussions.

Then there is the young man who read the article and could not believe it. He called up a Witness whom he knew and

said: 'Nobody can have views like that today! Did somebody tell her the answers or do you people really believe that?' The Witness was able to talk at length to the young man, who soon afterward attended a meeting at the Kingdom Hall for the first time.

The activity of Jesus Christ, according to the Bible record, included "journeying from city to city and from village to vil-

lage, preaching and declaring the good news of the kingdom of God." (Luke 8:1) His early followers did the same. Thus we read that the apostle Paul would speak with the people "every day in the marketplace." (Acts 17:17) Down till today, this personal contact is still the most effective way of communicating with people, and especially in making known "this good news of the kingdom."—Matt. 24:14.

To Me, Imprisonment Was a Blessing

AFTER graduating from high school, I took a job with the National Bank of Ethiopia, and I also became a deacon in the Greek Orthodox (Coptic) Church. In fact, I prided myself in my knowledge of the Bible. Then in 1972 two of Jehovah's Witnesses approached my compound to speak with me and my wife, and we invited them in to talk about the Scriptures. They placed with me a copy of the book *The Truth That Leads to Eternal Life*, but I must confess that I did not read it.

Upon their return, they offered to start a Bible study with me and my family. I declined, preferring to discuss certain topics of interest to me, such as baptism and the Trinity. In my church it was the custom to baptize infants—boys when forty days old; girls when eighty days old. I thought that the Witnesses were wrong in not supporting infant baptism, but, with all my Bible knowledge, I could not prove them wrong.

When it came to the teaching of the Trinity, the Witnesses showed me 1 Corinthians 15:28, where it says that Jesus would turn the rulership over to his Father. I had no answer as to how this could be possible and, at the same time, the Trinity teaching be true. Feeling that perhaps my understanding of the matter was faulty, I presented this and other scriptures to the priest, who was a spokesman for the church. When I did so he immediately asked if I had been talking to Jehovah's Witnesses.

"Yes, I have," I answered.

His response was that the Witnesses simply were reviving the teachings of the early anti-

trinitarian Arius. When I pressed for a specific reply to the scriptures at hand, he told me that he was a busy man and that I would have to come back later in the day for an appointment. I returned, only to be told that the appointment had been rescheduled for another day. Time after time I came to his office without being able to see him.

Still waiting for an appointment with the priest, I decided that no harm could come from visiting the meetings of Jehovah's Witnesses. Imagine how I felt when, after attending meetings for only about a month, the police came into a meeting in August 1972 and took all of us in attendance to jail! The local religious leaders had instigated this harassment.

In prison, where we remained for about two weeks, I was able to see firsthand the genuine love that Christ's disciples display from the heart. All the Witnesses shared their provisions equally, and showed real consideration for one another. Our heads were shaved, reminding me of the humiliating treatment meted out to King David's ambassadors by the Ammonites.—2 Sam. 10:1-5.

The two weeks in jail allowed me opportunity to take in more knowledge about the purposes of Jehovah God. I also reflected on the hatred (similar to that vented against Christ and his early disciples) that prompted the local religious leaders to have us imprisoned. Thus some months after my release, in May of 1973, my wife and I were baptized as Jehovah's Witnesses. We continue to serve our God happily here in Ethiopia.—*Contributed.*

A REMINDER OF

More Tranquil Times in Ulster

"TRANQUIL times in Ulster? Never!" That might be an

understandable reaction in view of the savage sectarian warfare, horrifying assassinations, devastating bombings, tragic spilling of innocent blood and mindless destruction of property that seem to be the order of the day in Northern Ireland.

But just a few miles out from the smoldering tension of Belfast's city center, we can find a real oasis of undisturbed serenity. This reminder of more tranquil times is Ulster's folk museum.

It is an imaginative and evocative project, established on 136 acres (55 hectares) of restful, beautifully wooded, parklike countryside, and illustrating in a remarkable way the living and working conditions that obtained in this province over the past two or three hundred years. Here, in a natural setting, we have the dwellings restored that were the homes of the cottiers, the poorest people, the farmers and

By "Awake!" correspondent in Ulster

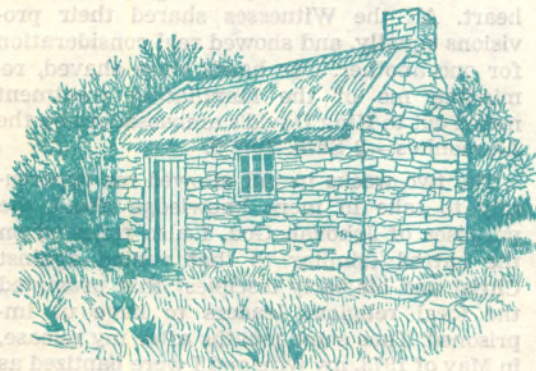
laborers, the weavers and others who lived in Ulster in years gone by. First, we examine the cottiers' houses.

The Cottiers' Houses

Your first impression might provoke reactions like, 'Oh, how pretty and charming. Just look at that delightful thatched roof with the smoke curling up from the chimney.' The houses have been carefully restored. Stone by stone and timber by timber they were dismantled at their original site and then carefully reassembled here. One house is but a single room, not much more than ten feet (3 meters) square, with a bare earth floor, thick stone walls with tiny windows, and a low thatched roof.

All life obviously centered around the hearth where the fireplace was formed by setting cobbles into the mud floor. This cottier's house has a bright turf or peat fire burning on the ground and clustered around it are all the primitive utensils for cooking.

Here, on that big black griddle, the woman of the house would cook the basic items of their diet, like the unleavened bread, or oatcake, which was then dried out in front of the fire propped up on the 'harnin' stand. Do you think that you would be able to produce the beautiful rounds of fresh soda bread, to be broken into 'farks,' or quarters, and eaten with



The cottier's house

mountains of fresh butter; or perhaps the potato bread, made from a mixture of wheat flour and boiled potatoes?

The rough whitewashed walls do little to dispel the almost claustrophobic feeling that envelops us in this very small house. Nor can we imagine that we would be too comfortable in that cramped, hard-looking bed in the 'bed-outshot' built into the wall near the hearth.

And yet, even here the thought struck—what have we really accomplished in the way of producing a better life now that we live in this 'modernized' twentieth century? What about the quality of life today in the concrete jungle that is Belfast, beyond the basic material level?

No doubt, whoever lived in this kind of home would be horrified at some of the agonizing results of so-called civilization with its deadly ability for sudden, indiscriminate destruction. Perhaps they would be glad to escape back to this sanctuary of peacefulness, hard though life must have been at times.

Besides these smaller, humble dwellings, however, where at times whole families lived, sleeping clustered together with their feet toward the fire, there are some fine examples of farmhouses. Here we climb the social ladder a rung or two and see some small improvement in the lot of the farmer and the farm laborer.

The Farmers' Houses

Even here, despite the likelihood of having the luxury of a flagstoned kitchen floor rather than one of dried mud, they had very little in the way of material comforts.

Again we find the floor-level open hearth, turf fire blazing, and most of the smoke, depending on the wind direction, going up the chimney breast built out from the wall. Just look at that great iron crane, pivoted on the left side of the fire,



The farmer's house

and used to swing those heavy iron pots and great black kettles out from the fire! What would you think of handling one of those pots, some of which could be up to twenty-five gallons (95 liters) in capacity? These ones do not look quite that big, but what a contrast from the three-pint (1.5 liter), quick-boiling electric kettle found in Irish homes today!

All the farmhouses of that more tranquil period were sparsely furnished, spartan to the extreme—a rough table, one or two uncomfortable-looking chairs and an open cupboard with the family's coarse earthenware crockery. Tucked in the corner might have been a 'settle' bed, which folded up to serve as a bench seat during the day, and by the fire was the inevitable salt box. That three-legged stool was very practical considering the uneven nature of the floor. Most of this crude furniture, besides the heavy timbers that support the house, were fashioned from bog oak that at one time abounded here in Ireland.

One interesting feature of these homes, we notice, is the 'jamb wall' that faces us as we enter the front, and indeed often the only, door. This partition wall with its small window to show who is approaching from the farmyard is built at right angles to the wall where the hearth is situated. It cuts off some of the draught from the

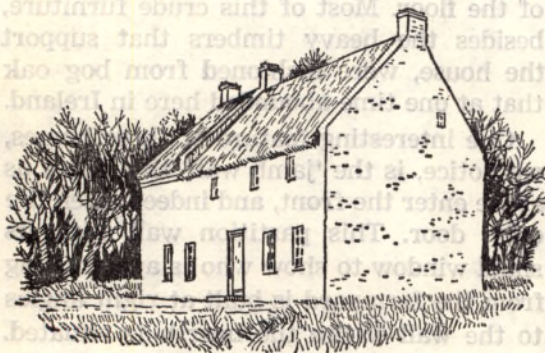
fire area and helps to form a cozy corner where family and friends could gather for an entertaining 'celidh,' or get-together.

At least the inhabitants of these farms would have been free of the current terror experienced by many living in lonely farmhouses in Northern Ireland, where occupants have been murdered by marauding car parties of sectarian killers. The spy hole in their 'jamb wall' finds its grim counterpart in many homes today in their one-way peepholes giving wide-angled vision of the door area, or the one-way glass now fitted to front doors to give warning of any intending assassin's approach.

Not everyone experienced the poverty that was the lot of so many of the common people over these past years, especially during and after the Great Famine of 1845. Some of the more well-to-do sections of society lived in greater luxury. This is illustrated for us when we take a look at the larger, two-storied house that at one time was occupied by a clergyman.

The Minister's House

This home really stands out from the others. It has a large kitchen area as we enter through the front door, with a parlor off to the left and a bedroom and study off to the right. Upstairs we find a massive master bedroom with not just one but two huge double beds, complete



The minister's house

with hot-water jars, copper bed warmer and chamber pots, besides wardrobe and clothes chests. The furnishings here show a craftsmanship and quality that were conspicuous by their absence in the homes of the parishioners.

The thing that really impresses us here is the immense hearth area. This is a magnificent, huge fireplace, so large that we can stand by the fire and look up the chimney where any items would be hung to be smoked and preserved. Also, this house has what has been lacking in them all up to now—an oven! All that the previous women had in which to do their baking was a pot buried in the turf fire.

The lady of this house would have heated her oven with some smokeless fuel, charcoal, raked out the remaining charcoal when the heat was sufficient, and then baked her bread in the residual heat. She might even have added to her family's diet some of the delicacies reportedly available around 1776: "Pigeons, 2s. [two shillings] a dozen; rabbits, 4d. [four pence] each; sole, 10d. a pair; lobsters, 5s. a dozen; wild duck, 10d. to 1s. each."

A large number of those living in Ulster during those years worked with linen, an industry ideally suited to the climate here. Life for them, as with the farmer, was rather harsh.

The Linen Workers

Working with flax, the plant that produces the fibers for linen, must have been backbreaking and utterly fatiguing. The stalks were pulled up by the roots and bundled together, then steeped in flax dams for from eight to fourteen days for 'retting,' in which bacterial action allows the fibers to be extracted.

This is what produced the linen, once those fibers were spun into yarn for weaving. The linen cloth, initially a pale-brown color, was laid out to whiten on the bleach-

ing greens. Incidentally, the penalty for stealing linen from such a green as this was in those days, almost unbelievably, death! Certainly hard days.

Some of the locals might have worked in the flax mill with its huge waterwheel to produce the power for the 'scutching' and suchlike, once this ceased being done by hand, but the craftsman in all of this was undoubtedly the weaver.

The Weaver's House

Illustrating the working conditions of the weaver of old, we see here in the weaver's house a modern-day weaver duplicating his work. Straight in through the front door, around the 'jamb wall,' we find ourselves in a kitchen very similar to that of the farmhouses we have visited. To the



The weaver's house

right is the bedroom with enough room for two double beds, and to the left, behind the hearth wall, is the weaving room.

No doubt about it, this man had job satisfaction. He was engrossed in his work. Weavers used to work from the first ray of light until the last, hence the many windows in this room. One visitor remarks to the weaver now at work that those long hours they used to work must have dehumanized the weaver, making him just part of the machine, as it were. But this weaver feels that in his case it is more a matter of the machine's becoming

an extension of him, with moods all its own.

It is really fascinating to watch the pattern developing in the linen cloth as he works away, feet and hands busy as he lifts first these threads, then those, and the shuttle flies backward and forward. Such coordination and concentration!

Other Reflections of the Past

Other exhibits here help us to appreciate the past. The doctor's case of instruments looks frightening. We are reminded that at one time, of course, no such thing as anesthetics existed. When the doctor had to use that wicked-looking saw in amputating, say, a leg, the patient might first be taken to the local inn and put into a drunken state before the operation took place. The local shoemaker would be pressed into service to prepare strong wax ends of flax and beeswax that would be used to ligature the sawn arteries!

The wooden yoke, complete with chains for carrying the milk containers, certainly does not look too comfortable either, and we are amazed at the rather crude equipment they had to use. Few persons today in Ireland would prefer those living conditions to what they may now enjoy due to modern technology.

But, equally, it is doubtful if the people who lived in those times and used all those implements would have preferred the present fears, insecurity, tension and hatreds to the relative tranquillity of their times. We seem to have replaced the injustices of their times with even more monstrous wrongs. Reflecting the present frustration of many, one wit scribbled on a wall in Belfast the following question: "Is there life before death?" So it is good to get a reminder of more tranquil times and to have the hope that one day tranquillity will be restored.

How they found your

Vitamins



THE sailor's legs were so swollen that he could not walk. His captain, hoping to stop the spread of the dreaded 'scurvy infection,' put the man ashore on a desolate Atlantic island. The poor wretch was bound to die, the captain felt, but perhaps the rest of the crew could thus be saved.

The deserted man chewed on fresh grass that he found in tufts here and there on the island. To his amazement, in a few days he could walk a little! His strength soon returned and eventually he managed to get picked up by a passing ship and he returned to his London home. Imagine the shock of his former shipmates when they first saw him—it was as if he had been resurrected!

The story of the sailor who 'ate grass like a beast and lived' was of great interest to a Scottish surgeon, Dr. James Lind. Having been with the British fleet, he was aware of the thousands of seamen who died yearly with scurvy. Lind's question was, Did the grass contain something that the man's normal diet did not? Was there a connection between scurvy and diet? Deciding to experiment, Lind became responsible for an important chap-

ter in the story of 'how they found your vitamins.'

Not that Dr. Lind was looking for a vitamin. The word was unheard of before 1911. The discovery of most vitamins was really accidental in that the researchers were attacking specific diseases, not studying foods or nutrition.

Further, this story has no one hero, but involves the efforts of men from many countries. These pioneers frequently did not benefit from one another's discoveries, as they lacked the benefits of modern communications. Yet, sometimes, despite the scorn of contemporary doctors and scientists, the efforts of these men constitute a story of courage, perseverance and eventual success.

The Vitamin C Story

"On 20th May, 1747, I took twelve patients in the scurvy . . . Their cases were as similar as I could have them," begins Dr. Lind's report. His conclusions showed "that the most sudden and visible good effects were perceived from the use of the oranges and lemons; of those who had taken them being at the end of the six days fit for duty."

Did the medical world of his day rejoice? No. Rather, the idea that diet causes scurvy was scorned and repudiated. Did not the crews of some ships drink lemon juice and still have scurvy? Unfortunately, this was true, but they had *boiled* the lemon juice, destroying what we now know as vitamin C.

Finally, some forty-seven years later, the British Admiralty allowed Lind to repeat his experiment. A whole fleet of ships was supplied with enough raw lemon juice for a twenty-three-week voyage. The results were so spectacular that a year later, in 1795, lemon juice (later replaced by lime juice) was made part of the regulation diet of British seamen. Scurvy was no longer 'master of the waves,' and even today British sailors are nicknamed "limeys"!

However, progress in isolating the *reason* for the effectiveness of lemons, and other fruits and vegetables, came very slowly. In 1905 a Dutchman, Professor Pekelharing, following his experiments upon mice, wrote: "There is an unknown substance contained in the milk, which even when the intake is extremely small, is of the utmost importance for nutrition." He showed that even in the seeming midst of plenty of food (fats, proteins, carbohydrates), if this "unknown substance" was missing, the mice would die. Unfortunately, his report was published only in Dutch and was not widely circulated.

Despite such setbacks, the idea of necessary 'mysterious elements' eventually was published and believed. You could eat great quantities of 'good foods' and still not get the 'necessary elements.' They were not fuel for the body but were somehow needed by it chemically. Could one of these be isolated?

By the early 1900's several teams of scientists were 'hot on the trail' of the

mysterious anti-scurvy substance. In 1931, a concentrate was made from lemon juice that was 20,000 times as potent as the original juice! Now came an intensive effort to discern the exact nature of this vital compound. Once its molecular "chain" or structure was determined, it could be synthesized and mass-produced. And so it happened that by 1935 vitamin C (also properly named ascorbic acid) became the first "pure" vitamin made available to the public through large-scale production.

But more than a vitamin was discovered in the search of a cure for scurvy. Man learned that illness is not always caused by the attack of some infection or bacteria. It is sometimes caused by a *deficiency in diet*.

That Complex B Family

The first clues to the existence of the B vitamins came in the fight against the dreaded disease beriberi, which attacks the nerves and heart. Beriberi also affects the digestive system. Our story again takes us out to sea.

In the early 1880's, at the direction of a young Japanese medical officer, Kanehiro Takaki, two ships left Japan on similar voyages, but with different diets. The first ship served the usual fare of rice, with some vegetables and fish. The second, however, also served the crew wheat and milk, in addition to more meat than was served on the first ship. The results were convincing. Beriberi ravaged the first ship, causing twenty-five deaths. There were no deaths on the second ship. Takaki soon succeeded in persuading the Japanese Admiralty to adopt a new diet for the entire navy.

When news of this was published in England, you might have expected deep interest to be shown, but that was not the case. Rather, it remained for a young

Dutchman, Christiaan Eijkman, to convince the Western world of nutrition's value against beriberi.

Working on Java, where beriberi then was rampant, Eijkman made an observation that changed his whole approach to the problem. Some chickens kept for experimental purposes had been exposed to what was then thought to be the beriberi "infection." Yet, instead of dying, in time they all recovered. How could this be, pondered Eijkman? He checked every possible variable and found only one clue. For a time the chickens had been on the polished 'white' rice, but then they had been put back on their usual fare, the native, unpolished 'brown' rice.

With tests made upon humans, Eijkman soon established that those who ate the unrefined rice did not get beriberi, while those who ate the supposedly better, polished rice did. Initially, this seemingly 'too simple to believe' answer was rejected, but Eijkman doggedly supported his claims with more and more research.

The full vindication of his approach, however, was left to others. The "vital substance" in rice hulls finally was isolated by a Polish chemist, Casimir Funk. Then, R. R. Williams, an American chemist, spent years determining the molecular structure and synthesizing the vitamin that was named Thiamine.

Still, much about the size and function of that complex B family was not appreciated with the discovery of thiamine. But the battle against pellagra would unlock that door.

In Italian "pellagra" means "rough skin." But this malady brings much more. It eventually leads to insanity and death. As is often true in the vitamin story, many individual pioneers linked the disease with nutrition. However, even in the mid-

1800's, since pellagra was found mostly among poor rural folk who lived chiefly on corn, popular theories attributed it to "corn poison" and "infection."

In 1915 more than 10,000 people died of pellagra in the United States alone. With its rapid spread, the United States Health Department sent Dr. Joseph Goldberger to the deep South, where this plague had reached epidemic proportions.

What Goldberger found was appalling—the victims were listless, slumped, covered with blotches. In view of the poor hygiene among many, with flies crawling everywhere, he easily could have been misled as to the real cause. But Goldberger suspected that the answer lay in faulty diet. He had noted that in state asylums the patients developed pellagra but the staff did not. Why? There was frequent contact between the two groups. But the staff had a diet of milk, meat and eggs, whereas the patients lived mostly on cereals.

Yet, even while newspapers printed the results of his studies as to the need for protein, a commission published the view that pellagra was an infectious disease caused by the sting of the stable fly! Goldberger was horrified. He firmly believed that until nutrition was recognized as the cause, people would continue to die by the thousands. What could he do to prove that infection was not the cause?

He announced that, under medical supervision, he and fifteen other volunteers would "infect" themselves by taking mucus from pellagra victims into their bodies. To the great surprise of many, none of the volunteers developed pellagra. From that time forward, Goldberger's conclusion that a diet consisting mainly of cornmeal, rice and pork fat leads to pellagra was accepted.

Yet Goldberger never found the exact substance that prevented the sickness he fought. Time after time it eluded him. We can recognize his difficulties when we appreciate that the B vitamin is really a family of complex substances, not easily separated from one another. It was not until 1937 that another researcher, Dr. Conrad Elvehjem, working with liver concentrates, isolated nicotinic acid, better known as niacin.

Today niacin is considered a "dietary essential." Without niacin, other B vitamins cannot function properly in the body. And the vitamin B complex or family still is under intense investigation, with some fifteen distinct members presently being recognized. It is generally agreed that, as in preventing pellagra, they work best as a "team."

Vitamin K—The Instant Success

But not all vitamins were discovered as a "cure" for a plague. In recent years, vitamin research has taken a new direction. It has been pursued in terms of nutrition—how any newly detected vitamin might assist in fighting several different diseases or health hazards.

Vitamin K is a good example of this. Its existence first suspected in 1929, soon it was "isolated" and it has been used widely since 1939. That took only ten years. Considering the history of vitamins, we might call vitamin K an instant success!

Vitamin K was discovered in experiments on chickens. It was found that on certain diets they lost their blood-clotting ability. Then it was observed that the blood of chickens coagulated faster on diets that contained sprouted soybeans. Eventually, the role of vitamin K as an essential for normal clotting came to light.

This vitamin, among other uses, has helped many newborn infants, often low in blood-clotting ability, to have a healthy start in life.

More to Come?

When the chemist Funk first coined the word "vitamine," he based it on the idea that the substance he had found was an *amine* (containing nitrogen) and *vita* (necessary to life). While not all vitamins contain nitrogen, time has proved him correct on the more important aspect. Although a typical vitamin, such as thiamine, may comprise only .001 percent of an adequate diet, it is *vital*.

However, recognizing this does not mean that all vitamin controversy becomes mere history; the debate continues. Today the differences revolve around recommended *dosage* and *diversity* of application. For example, you may have read in your local newspaper conflicting reports on the merits of megavitamin therapy (large amounts of vitamins for specific health conditions).

Generally, though, it is agreed that the men who found your vitamins found a "friend." And scientists readily admit that the list of about twenty-five "recognized" vitamins probably will grow. But, they caution, there is no basis for believing that vitamins are the panacea for all our health problems. In fact, overdoses of some can be detrimental.

So we find ourselves to be much like that deserted British sailor. He did not find the 'fountain of youth' on his desolate island. Yet, how grateful he must have been for the renewed strength provided by that vitamin-rich grass! Likewise, we too should be grateful for our limited knowledge of those minute compounds necessary to life—our vitamins.

Were You at CHICHI IN DECEMBER?

By "Awake!" correspondent in Guatemala

I EASILY could have missed you if, between the 17th and 21st of December, you were in Chichicastenango. This is that unusual Indian town in the mountains of Guatemala. So many visitors were there to watch the unique religious festivities that it was impossible to see everybody. And what went on in and around the church was so unusual, yes, even shocking, that my attention was focused mainly on that.

No matter what your religious beliefs may be, if you reflect on what occurs in Chichicastenango, I think you can appreciate why it has been spoken of as a place where pagandom and Christendom blend.

Though sometimes shortened to "Chichi," the full name is Chichicastenango, meaning "Nettle Town." It became the cultural center of the Quiché Indians (descendants of the ancient Maya) back in 1524, after the Spanish conqueror Pedro de Alvarado burned the fortress of Utatlán eleven miles (18 kilometers) to the north.

In Chichicastenango, after four centuries, we still find the Quiché following the traditions of their Indian forefathers. They have kept their pride of race, they speak their own dialect and, though called Christians, they practice religious rites that reveal pagan roots. This religious blend, seen in the 435-year-old Saint Thomas Catholic

church, is what attracts and intrigues many. As I did, you may wonder just how much of the ritual is for the old Mayan gods and just where the Catholicism begins—something that leaves many visiting Catholics quite disturbed.

I visited Chichicastenango for the first time twenty years ago. Based on what I have seen as well as read in books by archaeologists and historians, I must agree with the renowned Mayanist, Sir Eric Thompson. He wrote: "It is interesting to reflect that the Maya . . . accepted Christianity, but not as a substitute for their old gods. Instead, they quietly amalgamated the two religions to their liking. Maya gods and Christian saints were welded into a smoothly functioning pantheon." He concluded that "very few Maya could tell you which are the Christian and which the pagan elements in his religion."

Processions—What Religion?

The visitor might hear part of the religious activity before actually seeing it. This was my experience. As I threaded my way down the narrow cobbled streets toward the plaza, I heard an eerie, high-pitched sound, accompanied by rhythmic beats on a small drum. Turning a corner, I faced a group of somber-faced marchers

in their bright Indian garments. It was one of the fourteen *cofradías* (religious brotherhoods) carrying their image to be put in the church.

Each brotherhood is dedicated to a different saint, the principal one being Saint Thomas. The appointed officials of the brotherhoods are identified by the turbans they wear. These chiefs have the privilege of carrying the silver icon belonging to the brotherhood. The icon is about a foot (30 centimeters) high, in the form of a sunburst, with a small cross on top. It represents a fusion of pagan sun worship and Catholicism.

Once you reach the plaza, your attention is quickly drawn to the white church of "Santo Tomás." The plaza or marketplace spreads out before it, throbbing with people and activity. And there is no way of overlooking what begins on the church steps.

Supplicating the Gods

On the steps of this Catholic church, the Quiché begin their religious rites. There is an altar on the bottom step where they burn *pom*, or incense. From the altar they slowly proceed upward, a step at a time, swinging their incense burners. Kneeling on one knee on the top step, they continue praying, while gesturing with their hands, as though in conversation with a close friend. They believe that the rising smoke of the incense takes the prayers to their ancestors and, through them, to the gods. The worshipers abandon their incense at the church door and disappear inside.

Since the main door is crowded with Indians, I enter through the side door, as most visitors do. Even if you have been in other churches, you would probably be startled as you enter. It is so dark that it takes your eyes time to adjust. The

walls and ceiling, darkened by centuries of smoke, add to the eerie effect. And you know immediately where the smoke comes from.

Down the center of the church are wooden pallets ablaze with candles. White and red rose petals are profusely scattered among the candles, white representing the dead and red the living. The oldest male of the household kneels at the pallets, praying. A woman may pray if no male accompanies her. In some instances, a priest or wise man is hired as a go-between to supplicate the gods.

In the flickering candlelight you can see the intensity, the facial expression and gestures with which each person prays. We hear no Spanish, only the Quiché dialect. To what god or gods are they praying inside this Catholic church?

"Our Father in the heavens," the patriarch of a small family may begin his prayer, "we ask your direction now in the name of Saint Thomas. Listen to me, Saint Thomas, now that it is your day when you are going to go forth in procession. Also, would you help us, Saint



Incense altar on church steps



Indian worship on church floor

Joseph, Saint Sebastian, Pascual Abaj, god of the air and sky, god of the hills and valleys. O Jesus, protect us from evil spirits who would cast a spell upon us. We ask you to give us beans and corn, clothing and health. We also need a house and money and wealth. We need chickens, cows, sheep and cats. Saint Thomas and the other apostles, protect our animals. Do not let them get sick. And protect us from the civil authorities. May the mayor, the police and the courts not unjustly bother us."

Often the pagan gods outnumber the Catholic saints. Why do the Quiché, who profess Catholicism, address these many gods? The ancient pagan Maya worshiped their ancestors, as well as the sun, moon and other celestial bodies. They gave importance to the rain gods and the earth god. But what happened when the Spanish brought them Catholicism? Sir Eric Thompson explains: "They [the Maya]

have Mayanized Christianity, blending it with native concepts." And the shocking fact is that, though the Church has strongly exercised its influence in this community for centuries, most of its Indian members are still as much pagan as Catholic.

A Pagan Shrine

But who is Pascual Abaj, mentioned in the prayer? He is the most important local god of Chichicastenango. Rites are performed before his primitive image atop

a nearby hill. To the ancient black stone idol the people offer rose petals, incense, candles and occasionally sacrifices of decapitated chickens, dripping with blood. Native priests adorn him with pine branches and flowers. There he stands—three feet (about a meter) tall, with no body, just an elongated head, resembling the ancient corn god.

And what of the miniature crosses surrounding Pascual Abaj? Where do they fit in the blend? They have nothing to do with Christ Jesus. When the Spanish arrived, the Maya already had the cross. Its four arms symbolize many things: The four gods stationed at the corners of the world and holding up the sky, the four directions from which the winds and rains come, and four tribal gods.

So in the church of Saint Thomas, Pascual Abaj, sun god, earth god, Jesus and others all are mentioned together in the Quiché prayers.

Visitors' Questions

What do the thousands who visit this church each year think about the fusion religion they see? Some ask a priest or others about the unchristian practices. In reply, a person may be told that the Church permits the adults to carry on their pagan ways so the children will go to school and get Catholic instruction. Thus, it is said, the next generation will be different. But how many "next generations" have there been in the four hundred years since the Spanish gained control?

Other visitors ask their tour guides, who may explain: "The Indians pray to both the saints of the Church and their old gods because they are not sure which are the true ones. They have not given up their stone god on the hill. They go to pray before Pascual Abaj and tell the idol, 'I have already been to the church and asked the saints for many things. Now I'm here to ask you. Perhaps what they won't do for me, you will do.'"

Listen to a Quiché priest praying for his client, a woman. "O Saint Thomas, I am here to ask you to protect Macario. His wife has brought this sacrifice." (He holds up a handful of candles, gestures in the four directions and touches the candles to the woman's head, and she kisses them.) "Now these candles are holy, since you have blessed them, Saint Thomas. Let nothing bad happen to Macario, the husband of this woman. He is on a business trip to Guatemala City. He is not a bad man, so do not let anyone rob him. Keep him from accidents. If any *brujo* [witch doctor] has put a spell or a curse upon him, would you nullify it, Pascual Abaj? Bring Macario back to his house safely." (He then pours rum around the candles he has lit.) "This is for you, Saint Thomas. You will need it today. This is your

day to walk in the procession around the town and it will give you strength."

A guide, overheard excusing the Church's permitting the use of rum, said: "The rum has alcohol to purify the space for his sacrifice on the pallet serving as an altar." More accurate is an archaeologist's comment: "Often an alcoholic drink is poured over the petals. Even the Indians are not certain what this means, but in pre-Columbian pagan rites drinking was part of the ceremony." The many intoxicated celebrators indicate that drinking is still part of their worship!

Saint Thomas' Day

December 21 is Saint Thomas' day. In Chichicastenango the day opened on Christendom's side of the ledger. The pallets were removed from the aisle of the church and four priests were officiating at the Mass. In the rear of the church, images of the saints lined both sides. A group of chieftains entered with icons, one being Tzicolaj, the famed rider of the little wooden horse. But attention was focused on the three gaudily adorned images, Saints Thomas, Joseph and Sebastian.

Why, though, are the images surmounted by elaborate decoration in the form of huge half-moons, like halos, and adorned with many colored feathers, plastic fruit, and flashing mirrors? "To represent the Sun, the heart of the Sky," one reference

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work says. It is clear that to the Quiché the Catholic saints before whom they bow and burn candles are really their old idols or gods of Mayan mythology with new names.

The Mass concluded as the priest asked Saint Thomas to bless the people, who then filed out singing "Glory, Glory, Hallelujah." Catholicism's rites came to an abrupt end and throughout the remainder of the day paganism reigned supreme.

The *cofradía* officials moved quickly to the very center of the nave, kneeling to face the church altar. However, the chief-tain carrying Tzicolaj positioned himself before them, his back to the altar. Who is to say whether the obeisance was to the altar of the Catholic Mass or to Tzicolaj?

Next the images were hoisted and the exodus began. Out the front door, down the steps the procession moved. The chief-tains took a position in front of Saint Thomas, carrying their icons and Tzicolaj. From the church they went through the narrow aisles of the crowded plaza. Bedlam broke loose as explosive rockets were launched continuously, and firecrackers added to the noise. Finally, the procession returned to the church and the three saints were positioned atop the steps facing the plaza. There they received homage throughout an afternoon of dancing, drinking and music.

Too Much Paganism

Would you be surprised that the people of Chichicastenango know little of the origin of their religion? That is the case. Yet people of many religions are just as uninformed when it comes to explaining the doctrines and practices of their own "Christian" faith, because much paganism has been blended with what Christ Jesus taught.

Is the Church concerned about the paganism in the worship of the Quiché? This point came up in a conversation with a Spanish priest, a five-year resident of Chichicastenango, who was observing the festivities during most of the day. When asked what Tzicolaj represented, he answered, "I don't know." Then he added: "To the Quiché Tzicolaj is probably a symbol of the fusion of two religions." Finally, he lamented: "The Indians have very little religion [Catholicism] in their hearts and very much tradition of the old Mayan gods."

Looking back on my visit to Chichicastenango in December, I can appreciate why many visitors come away with memorable impressions, but somewhat shocked. Certainly, what goes on there is no accurate reflection of the worship of the true God "with spirit and truth," which worship Jesus spoke of and encouraged. —John 4:24.

"The Path of the Righteous Ones"

■ Contrasting the "path of the righteous ones" with the "way of the wicked ones," Proverbs 4:18, 19 says: "The path of the righteous ones is like the bright light that is getting lighter and lighter until the day is firmly established. The way of the wicked ones is like the gloom; they have not known at what they keep stumbling."

The light of the sun gets brighter and brighter from dawn until the "day is firmly established." So it is with righteous persons. The course they follow is light itself, as it is illuminated by godly wisdom. Because of striving to conform ever closer to such wisdom, their path becomes lighter and lighter. How different it is with wicked persons! Disregarding godly wisdom, they have no light. As if stumbling around in the darkness, they continue to bring trouble upon themselves.

Deer

— Creatures of Grace and Beauty



DEER are animals of outstanding grace and beauty. Large, peaceful eyes peer from the sides of the creature's head. The short, shiny hair lies flat and, therefore, contributes to the deer's streamlined appearance. Whether standing motionless, running or jumping, this slim, long-legged creature never looks awkward or out of place.

The antlers are definitely a distinguishing feature of deer. Usually only the males or stags have them. But in the case of reindeer and caribou, antlers crown the heads of both the male and the female. By contrast, Chinese water deer and the Asiatic musk deer have none.

Unlike horns, which are actually hard layers of skin, antlers are bones. Deer in-

habiting the temperate zones shed them in the winter and, in the early summer, begin to grow new ones. As for deer in tropical areas, antlers may be shed and new ones start growing at other times of the year.

New antlers are soft and covered with thin skin, from which short, fine hair grows. This skin, with its fine hair, is known as "velvet." Eventually blood stops circulating through the skin covering the antlers. When this occurs the skin dries up and the deer scrapes it off on the ground or against trees or shrubs.

The younger the stag, the shorter and smaller will be the antlers. The animal may grow its first set of antlers at the age of one or two years.

Just what purpose do antlers serve? Many naturalists believe that they are mainly used in fighting for mates and also play a role in establishing the stag's rank. It should be noted, however, that stags lacking antlers have no problem in being recognized by their juniors as occupying a superior rank. There are also indications that in serious battles the antlers play an insignificant part. So there may well be other reasons for the deer's antlers.

Commenting on a current theory, *The International Wildlife Encyclopedia* states: "Observations on red deer show that they appear to suffer from heat in the summer. They are active at night and spend a considerable time wallowing. Stonehouse's theory is that the antlers act as radiators in the summer as the velvet is richly supplied with blood vessels and measurements show that the temperature of the antler surface rises when the stags are active. During the summer when the stags are feeding they lay down a thick layer of fat,

so some means of getting rid of heat is needed. Hinds do not need such radiators as sufficient energy is expended by the developing fetus and whilst suckling. Antlers are awkwardly shaped for either fighting or signalling so this theory seems to offer a more reasonable explanation of their function, with the antlers being used secondarily for fighting and signalling."—Vol. 14, p. 1928.

The jumping ability and swiftness of deer are most remarkable. Strong muscles in the upper part of the deer's legs enable it to make tremendous leaps and to run quickly. A mule deer may cover the dis-

tance of twenty-five feet (7.6 meters) in one great bound. This deer can also jump to a height of about eight feet (2.4 meters) and run at a rate of thirty-five miles (56 kilometers) an hour. White-tailed deer have been known to jump forty feet (12 meters), and the maximum long jump is thought to be even greater.

Since deer are such swift, graceful animals, little wonder that the beautiful Shulammitte said of her lover: "My dear one is resembling a gazelle or the young of the stags." "Run away, my dear one, and make yourself like a gazelle or like a young one of the stags."—Song of Sol. 2:9; 8:14.

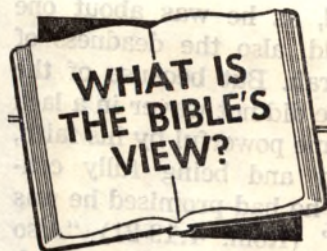
MUCH to LEARN

◆ Scientific investigators world wide have long pondered the question of how birds are able to navigate over great distances. In some respects birds seem to follow certain features of the topography, such as a coastline or mountain chain. But obviously more than that is involved, for migratory birds sometimes cross huge bodies of water or continue their migration at night when prominent land features are indistinguishable. How do they do it?

In the 1950's a German scientist showed by experiments that some birds use the sun's position as a means of guidance. Experiments even demonstrated that birds seem to have an internal biological clock enabling them to compensate for the apparent movement of the sun across the sky.

As to migratory birds at night, it appears that the stars are used. Some birds locate one star or a group of stars and fly at a certain angle relative to it. As with the daytime traveler steering by the sun, these birds at night adjust the angle of flight with respect to the stars by an internal sense of timing. Other birds seem to use a constant pattern of stars, just as a human might sight along the Big Dipper in locating the North Star.

Regarding the marvelous ability of birds to navigate in such ways, Dr. Stephen Emlen, an associate professor of animal behavior, observed: "Many persons point to such studies and conclude that the mysteries of animal navigation have now been solved. This is not true. Current theories fail to tell us how or why an animal selects one direction over another. And recent evidence indicates that star and sun cues may not even be essential for some migrants." Thus, some birds seem to be able to navigate at night under total overcast or even when flying between cloud layers. Dr. Emlen added: "This does not disprove that birds use celestial information, but it certainly implies that they may also use other cues for directional guidance. We do not know what these cues may be. Might a bird use the wind as a cue? Might some even orient by the earth's magnetic field? Recent studies suggest both of these possibilities. Perhaps one day we shall know. . . . We still have much to learn."



Can God Do Everything?

THE true God, Jehovah, is all-powerful and infinitely wise. He is always at the zenith of his abilities. Fittingly, the following acknowledgment is made in Scripture: "You are worthy, Jehovah, even our God, to receive the glory and the honor and the power, because you created all things, and because of your will they existed and were created." (Rev. 4:11) As the Creator, he has knowledge and power far beyond the capacity of frail humans to comprehend. He can do the humanly impossible.

On one occasion the Son of God assured his disciples: "With God all things are possible." (Matt. 19:26) But did he thereby mean that God can do everything, that absolutely nothing is impossible for Him?

The statement of Jesus Christ must be understood in the light of what was being discussed. Just prior thereto Jesus had pointed out how difficult it would be for a rich man to get into the kingdom of the

heavens, saying: "It is easier for a camel to get through a needle's eye than for a rich man to get into the kingdom of God." (Matt. 19:24) Since at that time the ruling class was made up of rich men, such words came as a real surprise to the disciples. They asked: "Who really can be saved?" That is, since a rich man cannot get into God's kingdom, who, then, can be saved? Jesus answered: "With men this is impossible, but with God all things are possible."—Matt. 19:25, 26.

Yes, it is impossible for imperfect humans to prove themselves to be righteous and deserving of salvation. Wise King Solomon noted: "There is no man righteous in the earth that keeps doing good and does not sin." (Eccl. 7:20) So God's arrangement to have sins atoned for by means of Jesus Christ is the only way through which salvation is possible. The Christian apostle John wrote: "He [Jesus Christ] is a propitiatory sacrifice for our sins, yet not for ours only but also for the whole world's."—1 John 2:2.

But there are obstacles standing in the way of a person's accepting God's means of salvation. Take the case of the rich, for example. They may have no spiritual inclinations but may trust in their riches rather than in the Most High. (1 Tim. 6:17) If proud of their wealth and position, they may not want to be numbered among the despised disciples of Jesus Christ, many of whom are very poor. Their attitude may be that of the Jewish religious leaders in the first century C.E. who said of Jesus: "Not one of the rulers or of the Pharisees has put faith in him, has he? But this crowd that does not know the Law are accursed people." (John 7:48, 49) Also, often the rapid gaining of wealth results in trampling upon the rights of others, sinning against them. A Bible proverb says: "He that is hastening to gain riches will not remain innocent." (Prov. 28:20) For anyone to gain salvation, the imperfect, sinful human must repent of these things and abandon wrong attitudes and practices. Humanly this may seem to be impossible. With God's help, however, the sinful human can do so, if that is really his desire.

Hence, the words "with God all things are possible"

must be understood in harmony with the context. They should not be applied to the extreme limit in *every* situation. These words relate specifically to the Almighty's grand work of salvation.

Consider, too, the statement of the angel Gabriel to Mary: "With God no declaration will be an impossibility." (Luke 1:37) The angel was not saying that God can do everything, regardless of what it may be. Rather, he was showing that there was reason for confidence in what God declares or states to be His purpose.

Mary had been told that, as a virgin, she would give birth to the Son of the Most High. (Luke 1:30-33) This was humanly impossible. Therefore, Mary asked: "How is this to be, since I am having no intercourse with a man?" Answering her question, Gabriel continued: "Holy spirit will come upon you, and power of the Most High will overshadow you. For that reason also what is born will be called holy, God's Son. And, look! Elizabeth your relative has also herself conceived a son, in her old age, and this is the sixth month for her, the so-called barren woman; because with God no declaration will be an impossibility."—Luke 1:34-37.

The case of barren Elizabeth's becoming pregnant illustrated that Jehovah God, by means of his spirit, could accomplish what he declared through the angel Gabriel to Mary. In faith, Mary replied: "Look! Jehovah's slave girl! May it take place with me according to your declaration."—Luke 1:38.

Centuries earlier, Jehovah God had done the humanly impossible by starting the line of descent leading to the Son to be born of Mary. This was by reviving the reproductive powers of aged Abraham and his barren wife Sarah. Commenting on this, the Christian apostle Paul wrote: "Although [Abraham] did not grow weak in faith, he considered his own body, now

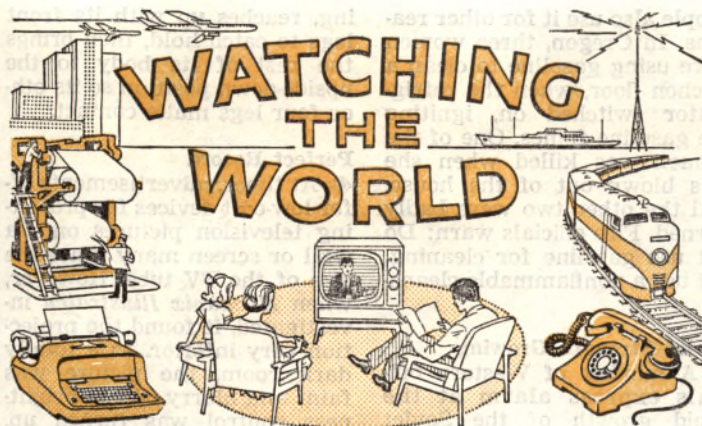
already deadened, as he was about one hundred years old, also the deadness of the womb of Sarah. But because of the promise of God he did not waver in a lack of faith, but became powerful by his faith, giving God glory and being fully convinced that what he had promised he was also able to do." (Rom. 4:19-21) "Also from one man, and him as good as dead, there were born children just as the stars of heaven for multitude and as the sands that are by the seaside."—Heb. 11:12.

Thus we can see that God is able to do everything that is in harmony with his purpose. His promises are certain to be fulfilled.

Jehovah God, however, cannot act contrary to what he is—the holy, all-wise and almighty God. That is why there are things that he simply cannot and will not do.

For instance, Jehovah cannot be unrighteous. The Bible tells us: "Far be it from the true God to act wickedly, and the Almighty to act unjustly!" (Job 34:10) For this reason it is impossible for him to look approvingly upon the deeds of wicked men. The Hebrew prophet Habakkuk wrote of him: "You are too pure in eyes to see what is bad; and to look on trouble [with approval] you are not able." (Hab. 1:13) He is also a God of truth and, therefore, the Christian apostle Paul spoke of him as the 'God who cannot lie.'—Titus 1:2.

Surely, then, the Almighty God merits our absolute confidence. Nothing can cause him to fail in carrying out his declarations and promises. "The things impossible with men are possible with God," said Jesus Christ. (Luke 18:27) Jehovah God can be depended upon because he cannot lie or in any other way act contrary to what he is. Since he cannot do bad things, we have a solid basis for faith in the fulfillment of all the promises found in his Word, the Bible.



Why So Much Cancer?

◆ Dr. Ernest Wynder of the American Health Foundation claims that most human malignancies are related to our "civilized way of living." At a conference on nutrition and cancer attended by over 1,000 physicians and dietitians, Dr. Wynder and others stated that cancer is closely related to dietary factors, in addition to the other recognized causes such as smoking, food additives or industrial by-products. A study showed that animals fed synthetic foods tended to develop increased tumors. It was also felt that some cancer may be partially determined by the eating habits of persons in their youth.

Billions for Snacks

◆ In one year, Americans spent a billion dollars on potato chips alone, as much as they spent on breakfast cereals. In the same year they spent about five billion dollars on other snack foods and soft drinks, more than they spent on fresh fruits, which are far more nourishing.

Ancient Teeth

◆ A study of about 5,000 mummies of ancient Peruvian Indians reveals that their teeth had fewer cavities than modern man. The various cultures studied are said to have flour-

ished from about 600 B.C.E. to about 1700 C.E.

Foremost Marriage Problem

◆ In England, money used to be the foremost marital problem among couples seeking counsel. However, according to Nicholas Tyndall of the National Marriage Guidance Council in England, sexual problems are now foremost. He says: "Couples are told all the time that they ought to be having a good, full and active sex life. They believe that, and if it doesn't happen to them, they want to know what to do about it." As a result, "it is affecting the stability of their marriages."

Largest Telescope

◆ At a meeting of the Optical Society of America, Soviet scientist Igor Karachentsev reported that a new 234-inch reflecting telescope has been in use since January in the Caucasus Mountains. Previously the largest one had been the 200-inch Hale telescope on Mt. Palomar, California. The Soviet telescope is said to have increased man's view into the solar system one billion times beyond normal eyesight.

Morbid "Game"

◆ "Death Race" has become a fast-selling arcade game in the United States. It has a computerized television screen

similar to that used in computer tennis, but with a difference. In "Death Race" simulated people run randomly across the TV screen, and the player, behind an accelerator and steering wheel, tries to run over and "kill" the "pedestrians." Each time that he does the machine emits a shriek. The player racking up the highest number of corpses wins. In some places, demand for the game reportedly has outrun the supply.

Prisons Failing

◆ Canadian prisons are in "turmoil and unrest," says the *Toronto Star*. In the past six years there have been 60 prisoner suicides and 14 murders by fellow prisoners. Many others were beaten, bludgeoned or stabbed. Four prison employees were killed in one year. The *Star* concludes: "We have failed—and in an expensive, spectacular way—to design an effective way of dealing with criminals. There is also impressive evidence that our prisons fail to change the behavior of people we send there. In the past 10 years, there has been a 90 per cent increase in the rate of violent crimes. Three out of every four convicted offenders have graduated from penal institutions."

Helping Choking Victims

◆ Several thousand persons die each year from choking on food lodged in their throats. Various methods have been suggested in helping, such as bending the victim and striking him hard between the shoulder blades, or removing the food with plastic tweezers or fingers, perhaps even cutting into the windpipe with a sharp instrument. Another method has proved to be effective in recent times. The rescuer gets behind the victim, clasps him in a 'bear hug' below the rib cage, makes a fist with one hand with the thumb placed in the victim's abdomen, then pulls up with a quick motion, repeating if necessary. This raises

the diaphragm and compresses the lungs so that air pressure in the windpipe is increased, forcing the obstruction out.

Koala Comeback

◆ The cuddly looking Australian koala bear was once nearing extinction. One year, about two million of them were killed for their pelts, used in coats, hats, bags and belts. But then laws prohibited such use, and now there is a surplus of koalas in the protected areas. Hence, some are being taken to other areas where they were once plentiful. Of course, their favorite food—the leaves of the eucalyptus tree—grows in the new locations.

Using Solar Power

◆ The energy from just fifteen minutes of sun shining on the earth could satisfy mankind's energy requirements for a year. But no one has yet devised an economical way of tapping that energy. However, more efforts are being made. By the end of 1976 the United States Energy Research and Development Administration was installing solar heating systems in about 1,300 hospitals, schools, factories, offices, hotels and other buildings.

Disposing of Sludge

◆ The disposing of sludge—thick and gummy sewage residue—is a growing problem in the United States. Currently the country must get rid of about 300 million tons of wet sludge annually, and the amount increases yearly. Dumping it into the oceans, or burning it, has been a popular method of disposal. But because of air and water pollution, those methods are being restricted by law. Sludge is being tested as a fertilizer and also as a landfill. However, experts warn that unless properly treated, such use could become a health hazard.

Gasoline Misuse

◆ Gasoline fuels automobiles and other machines, but some

people also use it for other reasons. In Oregon, three women were using gasoline to clean a kitchen floor, when the refrigerator switched on, igniting the gasoline fumes. One of the women was killed when she was blown out of the house, and the other two were badly burned. Fire officials warn: Do not use gasoline for cleaning, but use a nonflammable cleanser.

Soviet Strength Growing

◆ A number of Western officials express alarm at the rapid growth of the Soviet Union's military power. A Royal Air Force officer in England states: "Soviet progress in arms technology is so rapid that the West could lose its will to resist and submit to political pressure." It was claimed that during the last decade Soviet forces have changed from being primarily defense oriented to being more offense oriented.

More Girl Runaways

◆ The National Police Agency of Japan reports a sharp increase in the number of young girls running away from home. In a recent month, 4,110 fled. Half of them listed problems at home and school as the main reason. The other half cited personal problems with the opposite sex, the influence of friends, or the desire for a good time. Many of the girls steal or become prostitutes to support themselves.

How a Fly Lands

◆ How does a housefly land upside-down on a ceiling? For years some thought that the fly approached an overhead surface with its legs hanging down and then at the last instant did a 'barrel roll' to land. Others felt that the final maneuver must be a 'loop.' But when English naturalist Stephen Dalton photographed the procedure with a precision, high-speed camera, he found something else. The fly approaches straight at the ceil-

ing, reaches up with its front legs to catch hold, then brings the rest of its body to the upside-down position so its other four legs make contact.

Perfect Record

◆ At times, advertisements offer low-cost devices for projecting television pictures onto a wall or screen many times the size of the TV tube. However, when *Mechanix Illustrated* investigated, it found the projection very inferior. In a totally dark room, the picture was faint and blurry. When brightness control was turned up, sharpness was lost on an already poor picture. Said the magazine: "For over a quarter of a century inventors have tried to hook some sort of mechanical-optical gadget to a TV to get larger pictures or turn black-and-white sets into color. Every one was a flop. Not one [of the low-cost type] has gained consumer acceptance—a perfect failure record on the market."

Children's Foot Troubles

◆ A clothing specialist at the University of Nebraska says that 80 percent of teen-agers have foot troubles. Most of these, he feels, are due to the poor-fitting shoes that they wore in childhood. He recommends that children's shoes be matched to the widest measurement of the foot and at least a half-inch (12 millimeters) longer than the longest toe.

Wild House Cats

◆ The house cat is threatening some of Australia's wildlife. An official of the National Parks and Wildlife Service says that many people buy kittens as pets for their children, but later abandon the pets in the countryside. The cats turn wild, and in their search for food cause havoc among birds, lizards, snakes and small marsupials. The stronger and larger cats survive better and multiply, resulting in a kind of "supercat." One estimate is that there are several million

of these wild house cats roaming the countryside in certain areas.

Provoking Death

◆ A New York motorist was beaten to death when he angrily shouted at three youths whose car had nearly struck his. The youths got out of their car and attacked him with their fists, and also with a baseball bat. In this violence-prone world the sound advice given by the Bible is especially worth while: "An answer, when mild, turns away rage, but a word causing pain makes anger to come up."—Prov. 15:1.

Longest People-Tunnel

◆ Japan is constructing a railway tunnel that will be the world's longest for transporting people—33.6 miles (54 kilometers) under ground, with 14.5 miles (23 kilometers) be-

ing under water. It will link the main island of Honshu with the northernmost island of Hokkaido. About half completed, the double-track, two-way system is expected to be finished about 1982.

Killing Price

◆ A psychologist asked over 650 Americans the question "What is the least amount of money you would take to push a button to kill a person inside a black box (no one would ever know what you did)?" The answers were shocking. Nearly half of those who had killed before—usually military men—or those who had tried to kill, said that they would kill again for money—an average of \$20,000. About a quarter of those who had never tried to kill also said that they would kill for money—an average of \$50,000.

Life-Spans Compared

◆ The average European woman's life expectancy now exceeds 78 years, while that of American women is just 75.9 years. European men expect to live an average of 72 years, but American males reach only 68.2 years. There are just 69 white American males over 65 for every 100 white females, while there are 73 black and 87 Spanish-origin males for every 100 females of those ethnic backgrounds.

U.S. Capital of Illegitimacy

◆ Washington, D.C., the U.S. capital, "has the distinction of being the first major American city in which more children were born out of wedlock in a given year than were born to married women," reports the Associated Press. In 1975 unmarried women had 4,988 children, compared to 4,758 for married women.

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