

Awake!

FEBRUARY 8, 2004



Sleep Debt

Are You a Victim?

Sleep Debt

Are You a Victim? 3-12

Do you get the sleep you need?
How can you recognize and cope
with a serious sleep disorder?



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Sleep Debt A Growing Problem?

MILLIONS of people today are in serious "debt." This debt can be a major factor in wrecking their cars, damaging their careers, and even ruining their marriages. It can adversely affect their health and life span. It is a deficit that contributes to immune suppression, creating susceptibility to various infections. Conditions as different as diabetes, heart disease, and extreme obesity, as well as other health problems, have been linked to it. Yet, most victims are oblivious of this debt.

The culprit is sleep debt, which develops when a person does not get the amount of healthful sleep needed for well-being. This can be caused by voluntary sleep deprivation resulting from a person's life-style or by involuntary sleep deprivation because of illness.

Medical researchers estimate that earth's population is now getting, on average, an hour less sleep per night than what is needed. While this may seem slight, a nightly six-billion-hour debt has become the focus of research into both the variety of sleep-related illnesses and their impact on the quality of life.



Even occasional sleep deprivation can cause serious accidents

The medical world once viewed the chronic inability to sleep as just one disorder, commonly called insomnia. However, a commission created by the U.S. Congress recognized 17 distinct sleep disorders. At any rate, insomnia has so many causes that it is often considered to be a symptom of other problems, much as a fever suggests some sort of infection.

Even occasional deprivation of sleep can be disastrous. Consider the case of Tom. Although an experienced truck driver, he plunged his 18-wheel vehicle over an embankment, spilling 100 gallons of sulfuric acid onto a major highway. Tom admits: "I fell asleep." Studies of two U.S. highways estimated that drowsy drivers caused some 50 percent of the fatal crashes.

Consider, too, the occupational dangers of being around a sleepy coworker. Says Australian researcher Ann Williamson:



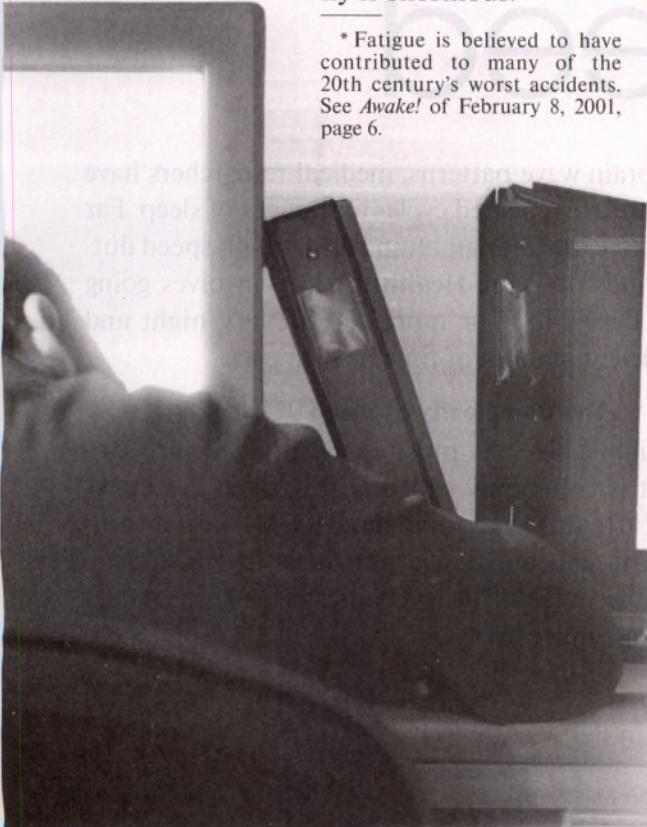
Awake!®

THIS JOURNAL IS PUBLISHED for the enlightenment of the entire family. It shows how to cope with today's problems. It reports the news, tells about people in many lands, examines religion and science. But it does more. It probes beneath the surface and points to the real meaning behind current events, yet it always stays politically neutral and does not exalt one race above another. Most important, this magazine builds confidence in the Creator's promise of a peaceful and secure new world that is about to replace the present wicked, lawless system of things.

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"After 17 to 19 hours without sleep [participants'] performance on some tests was equivalent or worse than that at [a blood-alcohol concentration of] 0.05%." In other words, subjects functioned as if at or beyond the legal limit in some countries of alcohol permitted in a driver's bloodstream! With hundreds of thousands of sleep-related auto and job-site accidents happening annually, the worldwide cost to productivity and family is enormous.*

* Fatigue is believed to have contributed to many of the 20th century's worst accidents. See *Awake!* of February 8, 2001, page 6.



Semimonthly Languages: Afrikaans, Albanian, Arabic, Cebuano, Croatian, Czech,[#] Danish,[#] Dutch, English,[#] Estonian, Finnish,[#] French,[#] German,[#] Greek, Hungarian, Iloko, Indonesian, Italian,[#] Japanese,[#] Korean,[#] Latvian, Lithuanian, Norwegian, Polish, Portuguese,[#] Romanian, Russian, Serbian, Slovak, Slovenian, Spanish,[#] Swahili, Swedish,[#] Tagalog, Ukrainian

[#]Audiocassettes also available.

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What factors may contribute to sleep debt? One is the social phenomenon often called 24/7—operating 24 hours a day, seven days a week. *USA Today* describes this as "a cultural earthquake that is changing the way we live," noting that "a new wave of round-the-clock retailers and services is profiting by mocking the clock." In many lands people watch all-night television programs and access the Internet when they should be sleeping. Then there is the toll taken by emotional disorders, often involving anxieties heightened by stress and the pace of life. Finally, there are a variety of physical diseases that can contribute to sleep debt.

Many doctors note how difficult it is to get their patients to take sleep debt seriously. One doctor complained that chronic fatigue is even considered "a status symbol" by some. And because their condition often worsens very gradually, victims of sleep deprivation may not recognize that they suffer from a serious sleep disorder. Many reason, 'I'm just getting old' or, 'I can't cope with life, so I tend to shut down' or, 'I'm tired all the time because I can never get the long rest I need.'

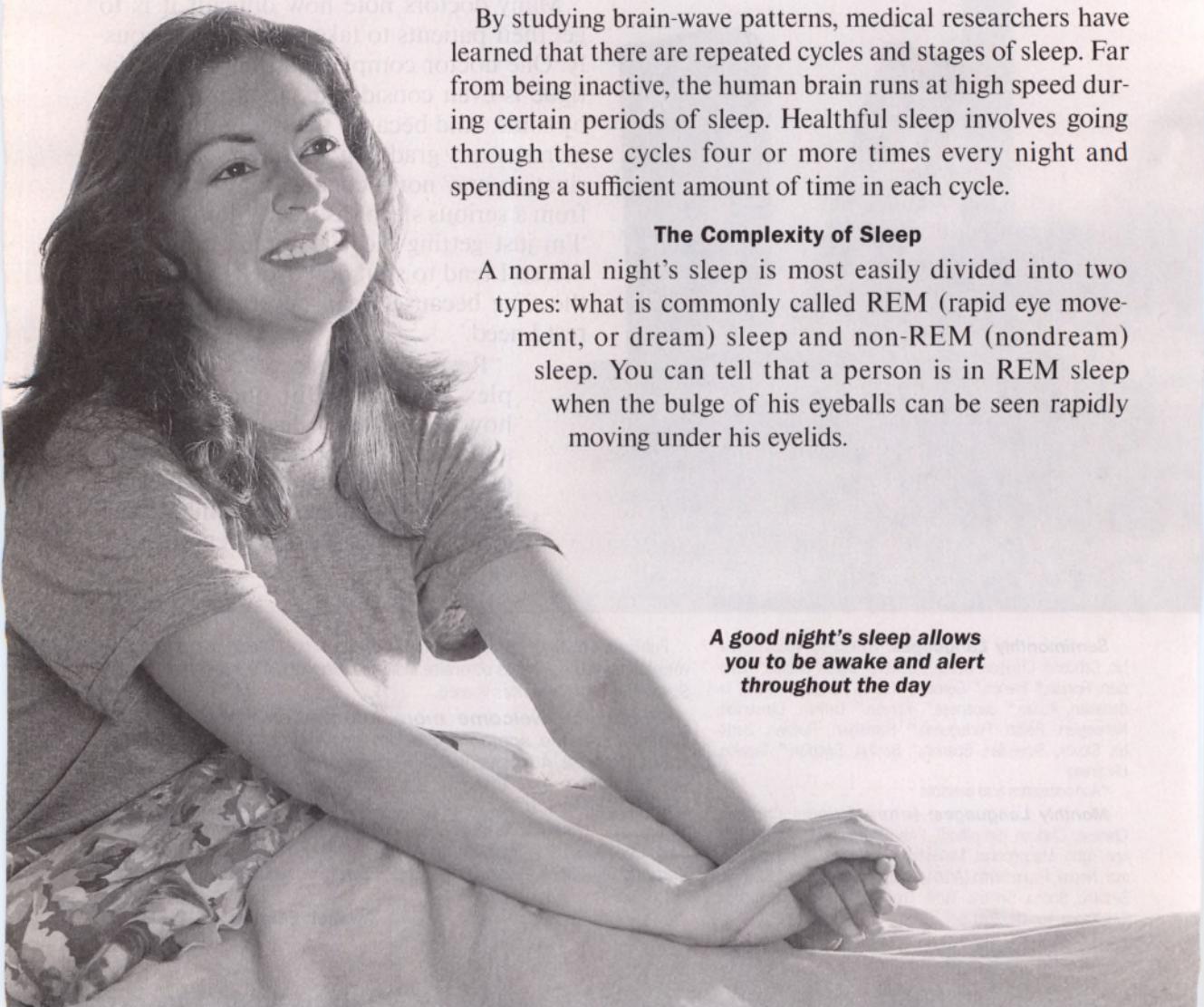
Reversing this sleep debt is a complex challenge. But understanding how a healthful sleep cycle works and learning to identify the signs of sleep debt can provide the motivation to change. Recognizing the symptoms of a serious sleep disorder can save lives.

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MOST of the progress in understanding sleep mechanics has been made in the last 50 years. What has been learned explodes some long-standing misconceptions. One is the assumption that since many bodily functions slow down during rest, sleep is little more than a state of inactivity.

Getting the Sleep You Need



By studying brain-wave patterns, medical researchers have learned that there are repeated cycles and stages of sleep. Far from being inactive, the human brain runs at high speed during certain periods of sleep. Healthful sleep involves going through these cycles four or more times every night and spending a sufficient amount of time in each cycle.

The Complexity of Sleep

A normal night's sleep is most easily divided into two types: what is commonly called REM (rapid eye movement, or dream) sleep and non-REM (nondream) sleep. You can tell that a person is in REM sleep when the bulge of his eyeballs can be seen rapidly moving under his eyelids.

A good night's sleep allows you to be awake and alert throughout the day

Non-REM sleep can further be divided into four stages. After lying down, you gently enter stage one—drowsiness or shallow sleep. During this stage your muscles relax and your brain waves are irregular and rapid. Its first occurrence each night typically lasts between 30 seconds and 7 minutes. When you move into stage two—true sleep—where you will usually spend 20 percent of the night, brain waves become larger. You may have fragmented thoughts or images passing through your mind, but you are unaware of your surroundings and cannot see even if your eyes are open.

Next come stages three and four—deeper to deepest sleep. Here, in what is also called delta sleep, your brain produces large, slow waves. It is now that your body is most difficult to rouse, as most of your blood is directed to the muscles. During this time (usually about 50 percent of the night), body recovery and repair take place, and it is during delta sleep that young bodies grow. It is important to note that anyone, youth or adult, who does not experience the deeper delta stages will likely feel fatigued, apathetic, or even depressed the next day.

Finally, each cycle is completed by the radically different REM stage. During this dreaming stage (typically occurring about every 90 minutes), more blood is directed to the brain and your brain waves are almost the same as if you were awake. However, you cannot move your muscles. This immobility apparently keeps you from acting out dreams and hurting yourself or others.

These REM, or dream, cycles get longer each time they occur during the night and appear to be crucial to mental health. In computerlike fashion, the brain sorts through short-term memory storage, deleting unimportant data and retaining what is desired for long-term memory. Abnormally infrequent dream cycles are known to result in emotional difficulties. Insomniacs, for example, spend less time than average in REM sleep, contributing to a vicious downward spiral of increasing anxiety.

So, what happens when we are regularly deprived (voluntarily or involuntarily) of these repeated cycles, thus creating a sleep debt? If we get fewer



Scientists now know that sleep involves various cycles and stages

consecutive hours of sleep than we need, we won't get as much of the last and longest REM sleep period, which is vital to mental health. If our sleep patterns become irregular, consisting of a series of naps, we often don't get to the deep delta sleep that is necessary to mend our bodies. Those in serious debt suffer from shortened attention spans, memory and vocabulary loss, a lessened ability to think analytically, and diminished creativity.

What triggers the body to demand sleep? A number of factors

evidently combine to create a circadian (daily) rhythm, or wake-sleep pattern. Brain chemistry appears to play a role. Also, there is a nucleus of nerve cells located in the brain that evidently helps control the sleep cycle. This "clock" is situated close to where the optic nerves come together. Light thus influences how sleepy we feel. Bright light wakes you up, while darkness induces sleep.

Your body temperature is also involved. When your temperature is highest—typically mid-morning and midevening—you are the most alert. As your body temperature drops, you become increasingly drowsy. Researchers agree that the pattern of wakefulness versus sleepiness varies with individuals.

How Much Sleep Do You Need?

Scientists tell us that, on average, humans require about eight hours of rest per night. But studies also show that individual needs vary dramatically.

An honest self-analysis can determine if you are already in a healthful pattern or



Smokers have greater difficulty falling asleep

are experiencing a sleep debt. Experts generally agree on these signs of healthy sleep:

■ **Sleep comes easily without resorting to drugs or fighting restlessness or anxiety.**

■ **You are rarely aware of waking up in the middle of the night, but if you do wake up, you can go back to sleep quickly.**

■ **Waking up occurs naturally at approximately the same time each morning and usually without the aid of an alarm clock.**

■ **Once you are up and going, you feel awake and fairly alert all day.**

Practical Points

What about those with occasional insomnia? Some experts suggest these practical steps:

1. Avoid alcohol as well as stimulants such as coffee or tea near bedtime. Many people mistakenly believe that alcoholic beverages will help put them to sleep. However, clinical studies show that alcohol can have a rebound effect and keep you awake.

2. Quit smoking. One authority notes: "Smokers have greater difficulty falling asleep, because cigarettes raise blood pres-

Some Common Misconceptions

1. Drinking caffeinated beverages is the best way to stay alert on a long drive.

Studies suggest that drivers often mislead themselves into thinking that they are more awake than they actually are. If you cannot avoid making a long, nighttime drive, it is better periodically to pull over in a safe area and take a short nap (from 15 to 30 minutes), followed by walking or jogging while stretching arm and leg muscles.

2. If I am having sleep problems, napping is the answer.

Perhaps, but many experts believe that the ideal pattern is one long stretch of sleep every 24 hours. A short, midday nap (typically 15 to 30 minutes) may help restore alertness during the afternoon slump without throwing your longer sleep cycles out of rhythm. But napping within four hours of bedtime may be detrimental to healthy nocturnal rest.

sure, speed up the heart rate, and stimulate brain-wave activity. Smokers also tend to wake up more in the middle of the night, possibly because their body is experiencing withdrawal symptoms."

3. Avoid extreme mental or physical stimulation just before bedtime. Exercise promotes proper rest but not if done immediately before trying to sleep. Tackling big problems or mental challenges just before you go to bed can interfere with the relaxed mood often needed to drift off to sleep.

4. Make sure that your bed-

room is quiet, dark and, where possible, relatively cool. Regarding noise, consider one famous study of people living near an airport who claimed that they no longer heard the airplanes. When their sleep patterns were tested, their brain waves recorded each landing and takeoff! The researchers concluded that the test subjects averaged about one hour less of quality sleep each night than those in a quieter zone. Earplugs or other methods of reducing noise would have greatly assisted them in getting restful



Be cautious about taking sleep-inducing medications

sleep. Some find that white noise (defined as any low-frequency, steady, and monotonous hum), such as made by an electric fan, is especially helpful if there is a need to mask street sounds.

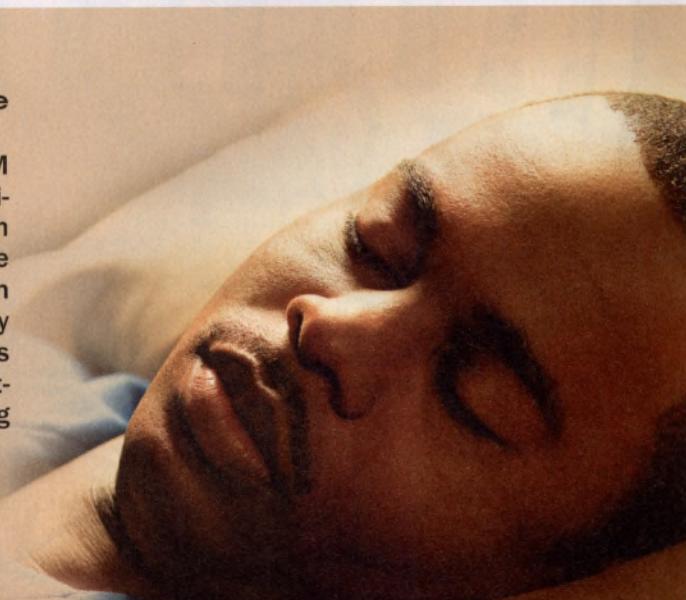
5. Be cautious about taking sleep-inducing medications.

There is growing evidence that many drugs prescribed to induce sleep are habit-forming, lessen in effectiveness with prolonged use, and have damaging side effects. At best, such drugs may be useful for short-term therapy.

Since insomnia can be brought on by stress, it is thought that one key to healthy sleep is making the time just before going to bed a quiet, pleasant period. It may be helpful to set aside the cares of the day and do something enjoyable, such as reading. There is an obvious and powerful advantage to the Bible's advice: "Do not be anxious over anything, but in everything by prayer and supplication along with thanksgiving let your petitions be made known to God; and the peace of God . . . will guard your hearts and your mental powers."—Philippians 4:6, 7.

3. The dreams we remember have robbed us of proper rest.

Dreams (usually occurring during REM sleep) are a sign of healthful rest and typically happen four or more times during each normal night's rest. Studies indicate that the dreams we remember are simply those from which we were awakened, either while they were happening or within a couple of minutes after they ended. On the other hand, a nightmare may create anxiety and make going back to sleep difficult.



Recognizing Serious Sleep Disorders



Treatment for sleep disorders should be under the supervision of a physician

SOMETIMES one's symptoms may indicate a serious sleep disorder. Chronic insomnia, which lasts more than a month, is often related to more serious problems, including depression. Chronic insomnia may also be a symptom of a serious physical ailment.

Sleep Apnea

Mario suffered from excessive daytime sleepiness. When he drove the family car, his wife had to watch him carefully, as he tended to lapse into momentary blackouts, which he rarely recalled.

Snoring may be a symptom of sleep apnea

He snored loudly and irregularly every night and at times violently jerked himself awake, gasping for breath.*

Mario had the classic symptoms of sleep apnea. Apnea literally means "no breath." An episode of sleep apnea may last anywhere from ten seconds to two or three minutes. The victim often thrashes around gasping for air and then falls asleep again, only to repeat the apnea hundreds of times per night. There are three types of apnea.

Central apnea occurs when the brain's respiratory control center doesn't give the command to breathe regularly. With *obstructive sleep apnea*, the upper airway at the back of the throat actually closes, blocking air movement. *Mixed apnea* is a combination of the two and is the most common diagnosis. The victim of any type of apnea can end up in virtually the same condition as someone who stayed up all night, every night!

Those with sleep apnea may live dangerous lives, for they can blank out while on the job or at the wheel of their automobile. They may suffer from high blood pressure, an enlarged heart, and an increased risk of stroke or heart failure. Dr. William Dement of Stanford University estimates that 38,000 Americans die each year from the cardiovascular consequences of sleep apnea.

While most common in obese men over 40 years old, sleep apnea can occur at any age, even in young children. There are several treatments—all best supervised by a medical sleep specialist. The most effective nonsurgical treatment for obstructive sleep apnea is the use of a device to create continuous positive airway pressure. The patient wears a mask over his nose at night, and a pressure regulator (custom-set by a physician) delivers just the amount of air needed to prevent apnea. If this does not rectify the condition, there are several surgical approaches, including using laser or radio-frequency waves to remove excess tissue from the throat.

Narcolepsy

Another sleep disorder requiring medical at-

* Erratic, heavy apnea snoring is not to be confused with the occasional light, rhythmic snoring of many sleepers—the major detriment of which is that others in the same bedroom are kept awake.



Narcolepsy is often misunderstood to be laziness

tention is narcolepsy—a neurological condition that causes excessive daytime sleepiness. Buck, for example, was constantly drowsy. He would fall asleep abruptly, even during important meetings. He started holding keys in his hand so that when this happened, the noise they made hitting the floor would wake him. Then he developed cataplexy—a condition causing him to become weak in the knees and collapse whenever he became excited. Next came symptoms of sleep paralysis as well as occasional hallucinations just before he fell asleep.

Narcolepsy typically starts between the ages of 10 and 30. Sufferers sometimes develop what is called automatic behavior, wherein they appear to behave normally but do not remember the passing of extended periods of time. The tragedy of this disease is that it often goes undiagnosed for years, while



Devices that regulate airway pressure can help alleviate sleep apnea

the victim is viewed as lazy, mentally slow, or peculiar. It is presently considered incurable, but symptoms can be treated with medication and adjustments in life-style—with varying degrees of success.*

Other Sleep Disorders

Two other disorders, sometimes appearing in combination with each other, directly affect the limbs, resulting in chronic insomnia. One is periodic limb movement disorder, in which the legs, and sometimes the arms, jerk and twitch during sleep. Consider Michael. Tests showed that episodes of periodic leg movements awakened him some 350 times each night!

A separate disorder is restless legs syndrome,[#] in which sensations deep within the leg muscles and knees cause a powerful

* For further information on narcolepsy, see *Awake!* of April 8, 1991, pages 19-21.

[#] See the November 22, 2000, issue of *Awake!* for further information on this disorder.

urge to move, thus preventing the sufferer from falling asleep. While this condition is sometimes associated with lack of exercise or poor circulation, some cases appear to be related to caffeine intake. Alcohol consumption is also known to aggravate the condition at times.

Bruxism is a disorder characterized by grinding or clenching the teeth during sleep. If it occurs regularly, it can cause abnormal wear of the teeth and extreme jaw discomfort, resulting in serious insomnia. Depending upon the degree of the problem, treatments vary from oral surgery to wearing a mouth guard at night.

This limited look at just a few of the many sleep-related disorders illustrates that it can be dangerous to ignore them. Treatment may be simple or complex, but it is often essential. If you or a loved one suffers from chronic insomnia or shows signs of any serious sleep disorder, it may be wise to get professional help soon. Even if treatment does not totally eliminate the problems, it may significantly reduce the risks involved and make the situation easier for all to endure. Then, in the future, as the Bible's promises are fulfilled, "no resident will say: 'I am sick.'" All illnesses will be completely removed as God makes "all things new."—Isaiah 33:24; Revelation 21:3-5.

In Our Next Issue

- **Pets—How Do You View Them?**
- **What's So Wrong With Telephone Sex?**
- **Discover the Wine Mine of Moldova**

Crossword Puzzle

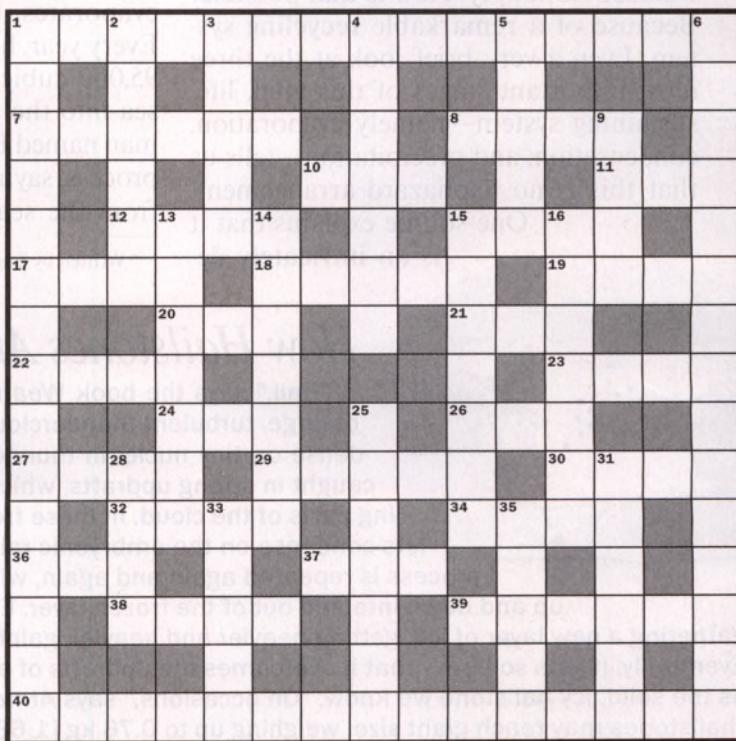
Clues Across

1. The place where Jesus had the blind man wash in order to receive sight [4 words] (John 9:7)
7. At this location Satan challenged Jesus to hurl himself down and be rescued by angels (Matthew 4:5, 6)
8. A low-growing plant (Job 30:4)
10. People in this condition were brought to Jesus (Matthew 14:35)
11. In ancient times this was used not only for cleaning clothes but also for reducing such metals as lead and silver (Isaiah 1:25)
12. Make null (Esther 8:8)
15. He was given this name because of his unusually hairy appearance at birth (Genesis 25:25)
17. His son Gaddi was one of the 12 spies sent into the land of Canaan (Numbers 13:11)
18. Paul wrote his letter to the Hebrews from this country (Hebrews 13:24)
19. A golden one of these alternated with each pomegranate that was sewn on the hem of the high priest's coat (Exodus 28:34)
20. The Jewish month in which Solomon completed the construction of the temple (1 Kings 6:38)
21. The father of Shimei, one of the 12 deputies who provided food for Solomon and his household (1 Kings 4:18)
22. Reacting to this, the brothers came to meet Paul on his way to Rome (Acts 28:15)
23. To shine with intense heat (Proverbs 26:21)
24. He and Aaron supported Moses' hands until Jehovah gave Israel the victory over the Amalekites (Exodus 17:12)
26. An insect noted for its industriousness and instinctive wisdom (Proverbs 6:6)
27. Female name
29. Glorify (Psalm 107:32)
30. A nephew of Abraham (Genesis 22:22)
32. Formerly (Genesis 41:31)
34. What anyone is who says he loves God yet hates his brother (1 John 4:20)
36. Youth (1 Samuel 17:56)
37. A daughter of Zechariah (2 Kings 18:2)

38. The mode of transportation that Jonah took to go to Tarshish (Jonah 1:3)
39. Attract artfully (2 Peter 2:18)
40. Where Moses constructed the tabernacle [3 words] (1 Chronicles 21:29)

Clues Down

1. As stipulated by Jehovah, a tenth part produced from the ground and from the cattle was given to them [5 words] (Numbers 18:21)
2. On the road to this village, the resurrected Jesus appeared to Cleopas and a fellow disciple (Luke 24:13)
3. Breads and cakes were often moistened in this way (Exodus 29:23)
4. Bezalel's chief assistant in constructing the tabernacle (Exodus 31:6)
5. Things imagined (Psalm 10:4)
6. Term Paul often used in regard to those laboring with him [3 words] (Philippians 4:3)
9. The color of the string that Jehovah commanded the Israelites to put
13. A city in the Judean wilderness (Joshua 15:62)
14. The two cherubs and the doors of the Most Holy were made of this wood [2 words] (1 Kings 6:23, 31)
15. Jehovah's empathy for his people is so great that if anyone touches them, it is as if that one were touching this (Zechariah 2:8)
16. One of seven court officials who ministered to Ahasuerus, the king of Persia (Esther 1:10)
25. Jezebel's father (1 Kings 16:31)
28. Paul acknowledged that there are many of these (1 Corinthians 8:5)
31. What a native of the city of Arab is called—such as Paarai, one of David's mighty men (2 Samuel 23:35)
33. Pilate said that he did not find this in Jesus (Luke 23:4)
35. According to Persian law, anyone who came into this courtyard without being called was to be put to death (Esther 4:11)



It's Raining Again!

"Oh, no! It's raining again!"

Have you ever said something like that? What about during a midsummer visit to a scenic spot on Ireland's Atlantic Coast, for example? You may have hoped for a warm, sunny day to enjoy the beautiful scenery—only to face gale-force winds and torrential rain instead. At a time like that, it is easy to forget that we should be grateful for the rain. Without it, neither we nor the beautiful scenery would be here at all!

After rain has watered the ground, it inevitably rains again, in a seemingly inexhaustible supply. How is that possible? Because of a remarkable recycling system. Even a very brief look at the three most important stages of this vital, life-sustaining system—namely evaporation, condensation, and precipitation—tells us that this is no haphazard arrangement.

One source explains that it is an intricately de-

signed process “behaving according to fixed, unchanging laws.”

Evaporation

About 97 percent of the earth’s water is held in the oceans. The rest is, for the most part, locked up in glaciers or stored in lakes and aquifers. Of course, ocean water is not drinkable. To reprise the cry of the anguished sailor in the poem “The Rime of the Ancient Mariner,”* in the oceans it is a case of ‘water, water, everywhere, but not a drop to drink.’

Before ocean water becomes drinkable, it takes a long, complicated journey. First, it evaporates, becoming a gas—water vapor. Every year, heat from the sun draws up about 95,000 cubic miles of water from land and sea into the atmosphere. In ancient times, a man named Elihu gave God the credit for this process, saying: “He draws up drops of water from the sea and distils rain from the mist

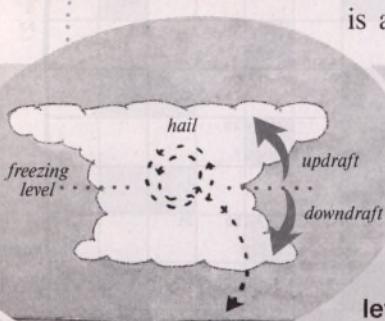
* Written by English poet Samuel Taylor Coleridge.

How Hailstones Are Formed

“Hail,” says the book *Weather*, “is the peculiar product of large, turbulent thunderclouds.” When cloud droplets condense on tiny nuclei in thunderclouds, they are sometimes caught in strong updrafts, which sweep them into higher freezing parts of the cloud. In these freezing temperatures, other droplets condense on the embryonic raindrop and instantly freeze. This process is repeated again and again, with the frozen raindrop traveling

up and down into and out of the frozen layer. Each time, the frozen raindrop is gathering a new layer of ice, getting heavier and heavier, gaining layers like those of an onion.

Eventually, it gets so heavy that it overcomes the updrafts of air in the cloud and falls to earth as the solid, icy hailstone we know. “On occasions,” says *Atmosphere, Weather and Climate*, “hailstones may reach giant size, weighing up to 0.76 kg [1.68 pounds] each.”



he has made."—Job 36:27, *The New English Bible*.

The atmosphere itself is "a system of almost unbelievable complexity" that extends more than 250 miles into space. Our water is recycled in the 6 to 12 miles closest to earth. This area, called the troposphere, is what the book *Our Fragile Water Planet* describes as "the region in contact with the earth's surface, the realm of clouds, rain, snow, hurricanes, and tornadoes."

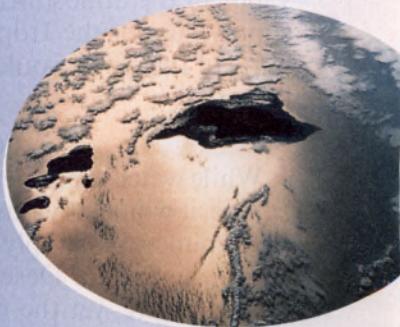
The warmer the air, the more water it can hold. That is why your wash dries more quickly on a warm, windy day. The atmosphere in tropical regions holds the most water. 'So how,' you might ask, 'is all this water moved to other places where it is needed?' By the mighty wind systems that encircle the globe. They are created because of the way the earth spins on its axis and because some parts of the earth's surface heat up more than others, keeping the atmosphere in a constant state of turbulence.

Our turbulent atmosphere contains huge air masses—great islands of air of more or less the same temperature. How big are they? They can cover an area of up to several million square miles. Warmer masses originate in the Tropics, and colder ones in arctic, or polar, regions. These air masses serve as massive atmospheric water transporters.

Another masterpiece of design is seen in the movement of water

Did You Know?

On average, the water contained in the atmosphere all around the world is enough for only about ten days' supply of rainfall.



One summer thunderstorm can expend as much energy as a dozen of the bombs that fell on Hiroshima during World War II. About 45,000 thunderstorms occur worldwide every day.

The atmosphere is not primarily heated by direct heat from the sun. Most of this heat energy passes straight through the atmosphere. It is heated by the energy that is radiated back into the atmosphere from the heated surface of the earth.



Water is the only abundant substance found on earth that exists simultaneously in the same locality in three different states—solid, liquid, and gas.



Fog is simply a cloud that forms at ground level.

vapor in the atmosphere. It transfers heat from areas of over-supply, such as the Tropics, to areas of need. Otherwise, some parts of the earth would keep getting inexorably hotter and hotter.

Condensation

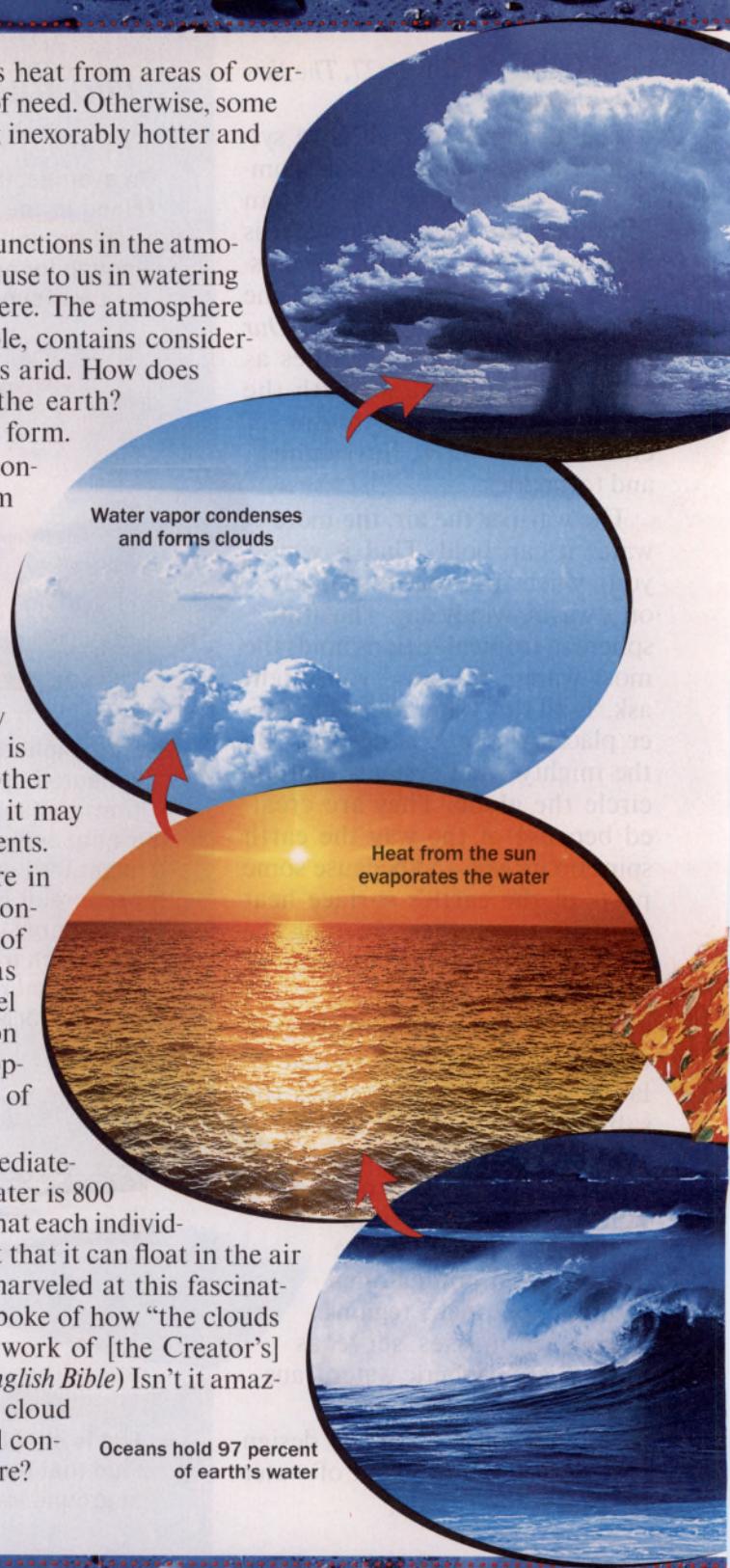
While water vapor performs vital functions in the atmosphere, it would obviously be of little use to us in watering the ground if it simply stayed up there. The atmosphere above the Sahara Desert, for example, contains considerable moisture, yet the region remains arid. How does atmospheric moisture get back to the earth?

First, it condenses, reverting to liquid form.

You have likely seen water vapor condense in a bathroom when the warm air from a hot shower hits a colder window or mirror. Something similar happens when a parcel of air decreases in temperature as it rises into colder altitudes. What makes air rise? This can happen when a warm air mass is pushed higher by a denser, colder one. Sometimes air is forced upward by mountains. At other times, especially in tropical regions, it may be carried higher on convection currents.

'But,' you might ask, 'what is there in the atmosphere for this vapor to condense on?' The atmosphere is full of extremely small particles—such as smoke, dust, and sea salt. As a parcel of air cools, water vapor condenses on these tiny nuclei. Minute water droplets then become visible in the form of clouds.

However, this water does not immediately fall to earth. Why not? After all, water is 800 times denser than air. The answer is that each individual cloud droplet is so small and light that it can float in the air currents. Elihu, mentioned earlier, marveled at this fascinating part of the water cycle when he spoke of how "the clouds hang poised overhead, a wonderful work of [the Creator's] consummate skill." (Job 37:16, *New English Bible*) Isn't it amazing to realize that the small, fluffy cloud floating in the air above you may well contain from 100 to 1,000 tons of moisture?





Precipitation

Many clouds never do produce rain or, to be exact, precipitation. It is relatively easy to explain how water gets into the atmosphere and how clouds float in the sky.

"The real difficulty," says one writer, "is to explain how the water ever gets down" again.—*The Challenge of the Atmosphere*.

It can take "a million or more cloud drops" to make one small raindrop. No one seems to have a totally satisfying answer as to what transforms these minute floating cloud droplets into the one billion tons or so of water that falls to the earth every minute of every day. Do the tiny cloud droplets simply merge to form larger raindrops? Sometimes they do.

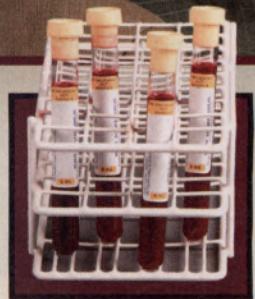
This likely accounts for raindrop formation in places such as the Tropics. But it does not begin to explain "the puzzle of raindrop formation" in places such as the Atlantic Coast of Ireland.

Here the tiny cloud droplets do not simply coalesce. By mechanisms not completely understood, they form tiny ice crystals. These group together to become "one of nature's finest masterpieces"—the snowflake. As snowflakes grow larger and heavier, they overcome rising air currents and begin to fall to earth. If it is cold enough, they fall as snow—billions of them in an average snow shower. But if they fall through a layer of warm air, the snowflakes melt and become raindrops. Snow is thus not frozen rain. Rather, most rain, in temperate regions at least, begins as snow, which then melts as it falls to earth.

So after a journey that might well have been thousands of miles long, involving complicated processes not yet fully understood, the rain returns. Granted, it may interfere from time to time with your personal plans and pursuits. But this remarkable arrangement results in our having a never-ending water supply. Yes, rain is truly a blessing. So maybe the next time you feel rain against your face, you will be a little more inclined to appreciate this gift from God.



IS YOUR PERSONALITY DETERMINED BY BLOOD TYPE?



ASSESSING someone's personality based on his or her blood type is popular in some countries. In Japan, for example, it is not unusual for some to ask, "What's your blood type?" as a conversation starter. Advocates of this idea claim that people with type A blood are calm, responsible, and suspicious; those with type B blood are openhearted, moody, easily deceived; and so forth. It is also asserted that a person of one blood type may find it difficult—or easy—to get along with someone of another blood type.

Based on this concept, some consider blood type to be an important factor when grouping students in schools, selecting executives at companies, or even choosing mates. Is there any proof that our blood type really

determines our personality? Are there any Bible teachings that touch on this matter?

What Is Blood Type?

The World Book Multimedia Encyclopedia explains: "The membranes of red blood cells contain proteins called *antigens*. More than 300 red-cell antigens have been identified." While some people have certain antigens, others do not, and some antigens cannot coexist. Therefore, as the encyclopedia adds, "based on the presence or absence of particular antigens, scientists have classified human blood into various groups."

The most widely accepted blood-grouping system is the ABO system, which classifies human blood into four types—A, B, AB, and O. In addition, the Rh system is commonly used. Actually, there are some 20 known

blood-grouping systems. Obviously, then, blood is very complex. The *Encyclopædia Britannica* states: “The large number of different red cell antigens makes it extremely unlikely that persons other than identical twins will have the same array of blood group substances.”

This suggests that, precisely speaking, everyone has a unique “blood type.” Claiming that people with certain blood types share personality traits thus seems to have little foundation. A number of factors evidently determine our personality.

What Determines Our Personality?

“Personality is those behavioral characteristics, both inherent and acquired, that distinguish each individual,” explains the *Encyclopædia Britannica*. Yes, in addition to what we have inherited, there are other factors—such as family environment, education, association, and experiences both good and bad—that affect our personality development. Therefore, our genetic makeup is not all that determines our personality. Even identical twins, who have the same genetic makeup, often have different personalities.

Another important fact is that one’s personality can change or be changed. The apostle Paul emphasized the power of Christian teachings to change people. He wrote: “Strip off the old personality with its practices, and clothe yourselves with the new personality, which through accurate knowledge is being made new according to the image of the One who created it.” (Colossians 3:9, 10) Christians recognize that they are sinners and have inherited sinful tendencies. For them to be accepted by God, their personalities had to be transformed.

What makes such changes possible? It is the power of God’s word, or message. Regarding the strong influence of God’s word, now found in the Bible, Paul wrote: “The word of God is alive and exerts power and is sharper than any two-edged sword and

pierces even to the dividing of soul and spirit, and of joints and their marrow, and is able to discern thoughts and intentions of the heart.” (Hebrews 4:12) When an individual yields to the influence of God’s spirit and tries to conform to the moral standards set out in the Bible, his personality can gradually change. The Christian personality formed in this way includes “the tender affections of compassion, kindness, lowliness of mind, mildness, and long-suffering.”—Colossians 3:12.

Christian Reasonableness

Granted, there is no Bible principle that prohibits the study of blood types. But any relation this might have to human behavior is another matter. As with all things in life, we must let God’s Word guide our steps. (Psalm 119:105) Reasonableness is also vital.—Philippians 4:5.

It would certainly be unreasonable to use one’s blood type as an excuse for not trying to correct personality flaws. Regardless of their genetic makeup, Christians must continue to make progress in molding their personality to reflect the qualities of Jehovah and Jesus as much as possible.—Ephesians 5:1.

In addition, Christians strive to view others in the way Jehovah views them. “God is not partial.” (Acts 10:34, 35) Jehovah gladly accepts people of all sorts. So it would be unreasonable and unchristian to shun or avoid the company of certain ones simply because of their blood type. The same would be true if one was to associate exclusively with those who have a “compatible” blood type. The Bible admonishes: “If you continue showing favoritism, you are working a sin.”—James 2:9.

As science and technology advance, there are many new findings and theories about the human body. It is natural to be fascinated by these concepts. Still, Christians do well to let the Bible—not human theories—guide their thinking. In all walks of life, Christians need to “make sure of all things” and “hold fast to what is fine.”—1 Thessalonians 5:21.

When Cats Go Wild

BY AWAKE! WRITER IN AUSTRALIA

EDGING forward, head lowered, eyes fixed, the predator stalks its quarry. Bunching its legs beneath its body, it pauses. Muscles quiver beneath tawny fur. Then, like an arrow shot from a hunting bow, it hurtles toward the startled prey. With a swipe of its taloned paw, the cat seizes its victim and pins it to the ground.

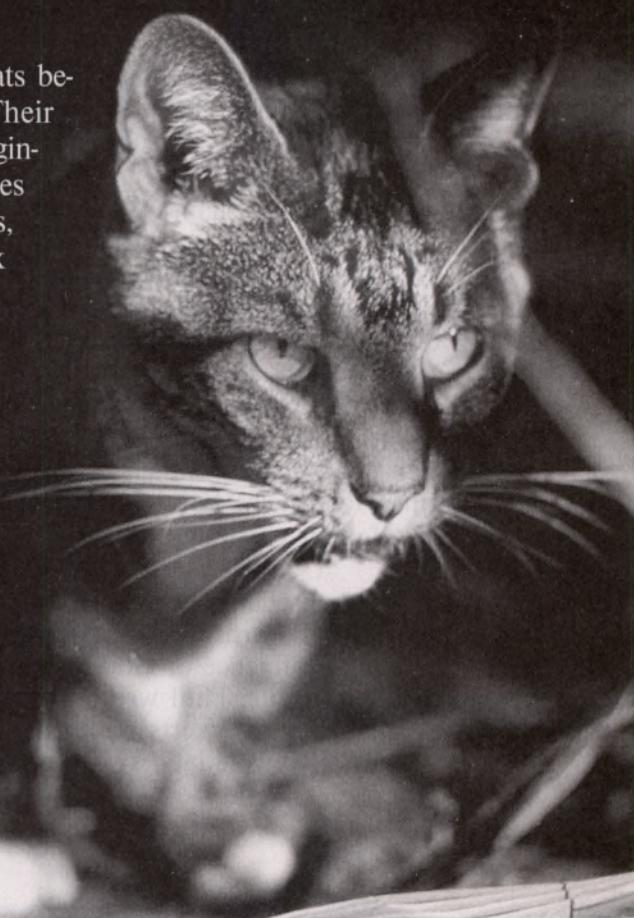
The venue of this life-and-death struggle is not Africa but Australia. The agile animal is not a mighty lion but a diminutive feline known as the feral cat. In Australia an estimated 12 million feral cats stalk the tropical jungles of the northern cape, the chilly heights of the southern alps, and the burning deserts of the central plains.

What Is a Feral Cat?

Australia's feral cats look like domestic cats because that is what their ancestors were. Their fur has the same colors—black, white, gray, ginger—and the same patterns, including patches of color, solid colors, or stripes. Feral cats, though, tend to develop a more muscular neck and shoulders than their domestic counterparts. Males weigh between 7 and 14 pounds, and females between 5 and 10 pounds. While domestic cats are mostly reliant on humans, feral cats are completely self-sufficient and are averse to human contact.

**One of Australia's
12 million feral cats**

Joel Winter/NSW National Parks
and Wildlife Service, Australia





The forebears of these feral cats accompanied the first European settlers to Australia, and during the 19th century, cats spread across the continent. Many cats escaped into the wild. Others were deliberately released during the 1880's in an effort to curb the rabbit plague that was destroying pasturelands. The cats soon adapted to their new home and became one of the most pervasive of Australia's many introduced species. Today, feral cats inhabit every corner of Australia, including many of its small outer islands.

Supremely Adaptable Colonizers

Feral cats are prolific breeders. A female will bear a litter of up to seven kittens before she is one year old. She will then produce up to three litters a year, with each litter containing between four and seven kittens. And she will remain fertile for her entire life span of seven or eight years. If she produced just three female and three male offspring each year and her daughters did the same, within seven years one feral cat would potentially have several thousand descendants.

To survive in Australia's harsh climate, however, more than sheer numbers are needed. The cats often hunt in the cool of the evening or in the early morning. They avoid the heat of the day by sleeping in hollow logs or in rabbit burrows. In addition, feral cats have conquered even the most forbidding des-

erts because they do not have to drink water to survive—they can obtain all the moisture they need from the flesh of their live prey.

Feral cats also maintain an adaptable diet. Although they prefer rabbit, the New South Wales National Parks and Wildlife Service states: "Cats kill and eat more than 100 native Australian species of birds, 50 mammal and marsupial species, 50 reptile species, and numerous frogs and invertebrate species." And they have formidable appetites. A male will eat between 5 and 8 percent of his body weight each day. If she is raising kittens, a female will consume up to 20 percent of her body weight daily. On one isolated island, just 375 feral cats consumed 56,000 rabbits and 58,000 seabirds in only one year.

Most of Australia's native animals are no match for a feral cat. According to the environmental magazine *Ecos*, it is thought that because of their predatory ways, feral cats are responsible for "the limited success of programs to reintroduce endangered mammals to arid Australia."

Pet or Pest?

Since the time of ancient Egypt, cats have been popular pets. In Australia, 37 percent of households own at least one cat. Many of these cats are not neutered, and unwanted kittens are sometimes dumped in nearby bushland, where they mature, breed, and boost the feral population.

To prevent a lovable pet from becoming an environmental pest, the National Parks and Wildlife Service in Australia recommends the following: Keep your cat at home, especially at night. Provide sufficient food. Identify your cat with a collar, tag, or microchip implant. Put three large bells on your cat to warn wildlife. Neuter your cat. Build a cat-proof fence to keep your cat in the yard.

Putting these suggestions into practice costs time and money. But for Australian cat lovers, it may be a small price to pay.

A Fascination With FIREWORKS

WHEREVER at the opening of a country fair or the Olympic Games, fireworks have become synonymous with celebration. Eruptions of light commemorate Independence Day in the United States, celebrate Bastille Day in France, and illuminate the skies over nearly every major city in the world each New Year's Eve.

When, though, did man's fascination with fireworks begin? And what ingenuity is involved in creating these dazzling displays?

An Oriental Tradition

Most historians agree that the Chinese invented fireworks about the tenth century of our Common Era, when Oriental chemists discovered that combining saltpeter (potassium nitrate) with sulfur and charcoal produces an explosive compound. Western explorers, such as Marco Polo, or possibly Arab traders were responsible for bringing this volatile substance to Europe, and by the 14th century, spectacular displays of fireworks were delighting European audiences.

But the powder that provided such a beautiful diversion also diverted the course of European history. Military men used the substance that came to be known as gunpowder to propel lead bullets, explode castle walls, and shatter political powers. "During the European Middle Ages," states the *Encyclopædia Britannica*, "fireworks accompanied the spread of military explosives westward, and in Europe the military fireworks expert was pressed into service to conduct pyrotechnic celebrations of victory and peace."

Meanwhile, the Chinese seemed to have largely ignored the destructive potential of gunpowder. In the 16th century, Matteo Ricci, an Italian Jesuit missionary in China, wrote: "The Chinese are not expert in the use of guns and artillery and make but little use of these in warfare. Saltpeter, however, is used in lavish quantities in making fireworks for display at public games and on festival days. The Chinese take great pleasure in such exhibitions . . . Their skill in the manufacture of fireworks is really extraordinary."

Secrets of the Spectacle

Early fireworks makers no doubt needed both skill and courage as they developed different displays. They discovered that large granules of gunpowder burn relatively slowly, whereas fine grains burn explosively. Rockets were created by sealing one end of a length of bamboo or paper tube and packing the lower section with large grains of gunpowder. When the gunpowder was ignited, rapidly expanding gases were propelled from the open end of the tube, hurling the projectile into the sky. (This fundamental principle is used today to send astronauts into space.) The top end of the rocket was packed with fine gunpowder so that the projectile would explode, if all went well, when near the apex of its trajectory.

Fireworks have changed little technologically over the centuries. However, there have been some improvements. The Orientals originally knew how to produce only white or gold-colored displays. The Italians added color. At the beginning of the 19th century, the Italians found that when they added





potassium chlorate to gunpowder, the mixture burned with enough heat to turn metals into gas, tinting the resulting flame. Today, strontium carbonate is added to produce a red flame. Bright-white flame is produced by titanium, aluminum, and magnesium; blue by copper compounds; green by barium nitrates; and yellow by a mixture containing sodium oxalate.

Computers have added another dimension to fireworks spectaculars. Instead of igniting fireworks by hand, technicians can time their displays to perfection by programming computers to ignite fireworks electrically so that they explode to the rhythm of a musical performance.

A Religious Connection

As the Jesuit missionary Ricci noted, fireworks were an integral part of Chinese religious celebrations. The magazine *Popular Mechanics* explains that fireworks were “invented by the Chinese to chase demons from New Year’s and other ceremonial occasions.” In his book *Days and Customs of All Faiths*, Howard V. Harper states: “From earliest pagan times people have carried torches and built bonfires on their big religious occasions. What could have been more natural than the addition of the spectacularly colored and self-moving light of fireworks to the festivities.”

Soon after fireworks were embraced by nominal Christians, fireworks makers were assigned a patron saint. *The Columbia Encyclopedia* states: “[St. Barbara’s] father is said to have shut her up in a tower and then to have killed her for being a Christian. He was struck down by lightning, and, by an extended analogy, St. Barbara became the patroness of makers and users of firearms and fireworks.”

No Expense Spared

Whether for religious or secular celebrations, the public seems to possess an insatiable desire for bigger and better fireworks displays. Describing one Chinese fireworks display in the 16th century, Ricci wrote: “When I was in Nankin I witnessed a pyrotechnic display for the celebration of the first month of the year, which is their great festival, and on this occasion I calculated that they consumed enough powder to carry on a sizable war for a number of years.” Regarding the cost of this display, he said: “They seem to have no regard for expense where fireworks are concerned.”

Little has changed in the intervening centuries. In the year 2000, in just one celebration staged over the Sydney Harbour Bridge, 20 tons of fireworks were set ablaze to entertain a million or more spectators gathered on the harbor foreshores. During the same year, in the United States, \$625 million was spent on nearly 157 million pounds of fireworks. Certainly, many cultures continue to be fascinated by fireworks, and it can still be said: “They seem to have no regard for expense where fireworks are concerned.”

"We Appreciate the CLOTHES WE WEAR"

BY AWAKE! WRITER IN MEXICO

WHEN the Spaniards first arrived in Mexico in the 16th century, they found a variety of different cultures—the Aztec, the Maya, and others. Were these cultures completely wiped out by the Europeans? No, they are still here. About 12 million people in Mexico are direct descendants of pre-Columbian ethnic groups. Many speak their ancient languages. And their beautiful costumes make them stand out.

The southwestern state of Oaxaca, the area with the greatest cultural diversity in Mesoamerica, is like a huge fashion show. There we find the Chontal, who depend on agriculture, cattle raising, and hunting and gathering in the mountains for their sustenance. Their family gardens are full of fruits, vegetables, and flowers. The Chontal show their fondness for nature by embroidering animal figures and flowers in red and black on women's blouses. Single women complement their attire with colorful ribbons in their hair.

Sharing the Isthmus of Tehuantepec with the Chontal are the Huave and Zapotec, who dress similarly; yet, somehow local residents can tell a woman's extraction by her outfit. The Zapotec, who call themselves people from the clouds, can even determine which village a woman is from by the way she arranges her dress. A more elaborate design is used by the Chinantec, from the northern part of the same state. Chinantec women tell their ancestral history in the embroidered symbols of their loose, sleeveless dresses called huipils. For formal occasions they wear splendidly embroidered outfits called "large stomach" in their language.





Maya lace underskirt



Zapotec embroidery



*Maya,
Yucatán*



*Zapotec,
Oaxaca*

*Nahuatl,
Puebla*

*Tzotzil,
Chiapas*



PUEBLA

OAXACA

CHIAPAS

Mixtec women, who inhabit parts of the states of Oaxaca, Guerrero, and Puebla, are also fond of embroidery. In one region women embellish their muslin blouses with a technique called "make me if you can." Just as with other Mexican peoples, Mixtec from the coast are still using the same kind of fabric that was used by their ancestors hundreds of years ago. Their present-day weaving technique is illustrated in museums on pre-Hispanic figurines and in drawings.

Ancient Maya and Aztec attire for men was particularly elaborate. Today men in most indigenous groups dress more or less conventionally. Yet, a trace of that pre-Hispanic preference can still be seen among some indigenous people, such as the Huichol. Embroidered Huichol clothing, a symbol of social standing, has such complicated designs and accessories that it takes some time to study and appreciate all the details.

The best-preserved pre-Hispanic attire can be found in the Nahuatl communities of Cuetzalan, in the state of Puebla, where women wear showy headdresses of yarn interwoven in their hair (photo on page 26) and use the *quechquemil*, a sheer decorative shawl. Similar items are depicted in ancient codices.

The highlands of the state of Chiapas are a mosaic of different ethnic groups, some of them descended from the same roots. There, the Tzotzil, Tzeltal, and Tojolabal peoples wear outfits that to them are just everyday clothing but to the outsider are quite a visual experience.

Many there also make their own fabric. Wouldn't learning from your mother how to make your own cloth give you a strong sense of identity? Tzotzil women in the cool highlands of Chiapas go through the entire process of shearing the sheep and then washing, carding, spinning, and dyeing the wool with natural dyes before weaving the fabric on a backstrap loom. "It was hard at the beginning," proudly recalls Petrona, a girl from

Chamula, "but I felt very happy when I made my first wool *nagua* [skirt] and embroidered my first cotton blouse. I also made my sash." After learning of the work involved, we understand why she says: "We appreciate the clothes we wear."

In the most conservative regions of the Yucatán Peninsula, the Maya women use an *hipil*, a loose white dress embroidered with colorful patterns, for everyday wear. Many times this garment includes a lace underskirt. For special occasions women and young girls—both in the countryside and in the cities—proudly wear a *terno*, a more elaborate version of the *hipil*.

For visitors, such typical Mexican dresses can be very expensive. Yet, the indigenous people can enjoy this luxury, even though most of them are of little means, because they painstakingly make these dresses themselves.

Attending the Christian meetings of the 219 indigenous-language congregations of Jehovah's Witnesses in Mexico can be a feast for the eyes. These are occasions when those attending can wear their formal costumes, a legacy from their forefathers—and how beautiful these clothes are!

Crossword Solutions

T	H	E	P	O	O	L	O	F	S	I	L	O	A	M
O	M	I	H	D	D	Y	Y	Y	E	R	B	F	T	E
T	E	M	P	L	E	O	H	E	R	B	F			
H	A	E	I	L	L	A	L	Y	E					
S	U	S	I	I	T	A	L	Y	B	E	L	L		
E	U	N	D	O	I	E	S	A	U	L				
N	E	W	S	T	B	G	L	O	W					
S	H	U	R	E	A	N	T							
O	L	G	A	E	X	T	O	L	H	A	Z	O		
F	O	O	N	C	E	H	L	I	A	R	R			
L	A	D	R	A	B	I	N	B	K					
E	S	H	I	P	A	E	N	T	I	C	E			
V		M		A		E		T		R				
I	N	T	H	E	W	I	L	D	E	R	N	E	S	S

Watching the World

Mandarin Chinese and the Brain

Psychologist Dr. Sophie Scott and her colleagues in London and Oxford recently used brain scans to determine which parts of the brain help us to understand speech. The researchers discovered that when English speakers heard English, their left temporal lobes became active. However, "when Mandarin Chinese speakers heard their native tongue, there was a buzz of action in both the right and left temporal lobes," reports *The Guardian* newspaper. Why? "The left temporal lobe is normally associated with piecing sounds together into words; the right with processing melody and intonation," explains the paper. "In Mandarin, a different intonation delivers a different meaning: the syllable 'ma,' for instance, can mean mother, scold, horse or hemp," depending on the tone. Dr. Scott comments: "We think Mandarin speakers interpret intonation and melody in the right temporal lobe to give correct meaning to the spoken words."

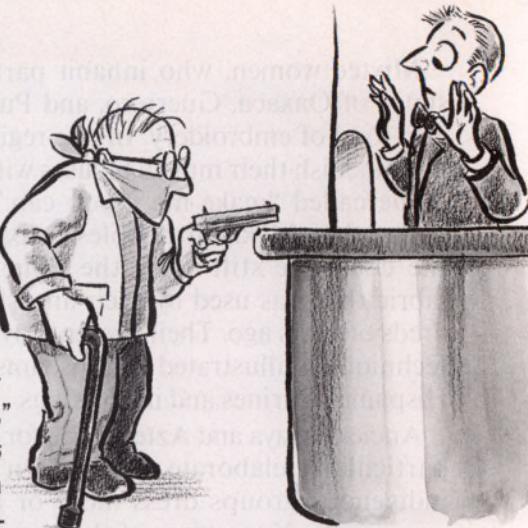
Race Resumes for World's Tallest Building

"Urban planners around the globe are racing once again to build the world's tall-

"Gray" Criminals

"Britain's first prison wing specially adapted for elderly inmates has been established to cope with a sharp rise in the number of pensioners turning to crime," reports *The Sunday Times* of London. The unit, in a Portsmouth jail, has stair lifts, adapted gym equipment, and staff trained in nursing skills. Research shows that more than 100,000 pensioners "have turned to—or considered turning to—crime" to augment their state benefits and pensions. Some have resorted to drug dealing, shoplifting, smuggling cigarettes and alcohol into Britain, and even robbing banks. In 1990, 355 pensioners were jailed, but the figure for 2000 was 1,138. Many have no previous criminal record but "are under huge pressure to maintain a standard of living," says criminologist Bill Tupman. "These are not the very poorest pensioners but those in the middle classes who have been hard-working, law-abiding members of society throughout their lives."

est building," states *The Wall Street Journal*. Already under construction in Taipei, Taiwan, is a skyscraper that is expected to reach 1,667 feet—about 300 feet taller than the Twin Towers were in New York City. Meanwhile, Shanghai, China, is going ahead with its plans to build a 1,614-foot-tall World Financial Center. Shanghai officials claim that this building will actually be taller than the one in Taiwan, which depends partly on a 164-foot television



antenna for its height. Reaching even higher, Seoul, South Korea, wants to build an international business center that is 1,772 feet tall. And not to be outdone, some have proposed building the world's tallest building to replace what was lost in the September 11 terrorist attacks on New York City. "Few people in the aftermath of the 2001 attacks would have predicted such a quick return to the tallest-building race," says the *Journal*.

Angry Youths Risk Their Hearts

"Researchers have discovered that children and teenagers with high hostility levels are up to three times more likely to develop metabolic syndrome—a dangerous precursor to heart disease—than their more mellow peers," reports *The Gazette* of Montreal. American and Finnish researchers who tested the hostility level of 134 teenagers and children found that angry youths were 22 percent more likely to develop risk factors for heart disease than youths with lower anger scores. "People don't just wake up one morning when they're 50 and have heart disease," states

Dr. Kristen Salomon, co-author of the study. "Cardiovascular disease starts early in life."

Britain's Oldest Bird?

"Britain's oldest known bird is still flying high after five million miles and 52 years," reports London's newspaper *The Times*. The bird, a small black-and-white Manx shearwater, "was first ringed in May 1957, when it was about six years old." It was trapped again in 1961, 1978, and 2002, after which ornithologists did not expect to see it again. But early in 2003, it reappeared off the coast of North Wales. The British Trust for Ornithology reckons that the bird has

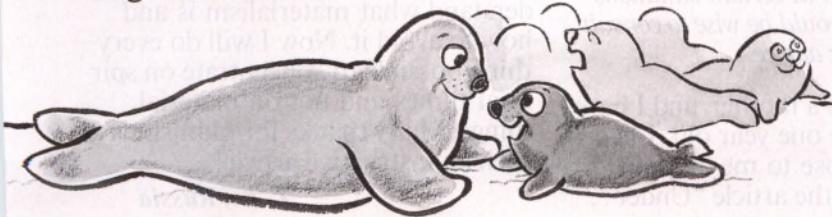
floated at least 500,000 miles when migrating to and from South America. Adding its regular feeding flights of 600 miles, scientists conclude that it has flown more than five million miles. Graham Appleton of the Bardsey Bird Observatory in North Wales says: "The old bird was given its fourth ring; again, something of a record. The others had all worn out."

Children's TV Disappearing in Spain

"Afternoon television programs for children have disappeared," reports the Spanish daily newspaper *El País*. Manuel Cereijo, a spokesman for Spanish State Television, explains that "children are not a sufficiently reliable audience to justify broadcasting special programs for them during the afternoon." But this situation worries experts such as Lola Abelló, a director of Spain's Association of Pupil's Parents, who notes: "Children watch whatever is put in front of them." One out of every 3 children in Spain has a television in his bedroom, states the report, and as a result youngsters between 4 and 12 years of age no longer talk about cartoon characters but, instead, talk about pop stars and gossip programs. "It is sad," says Abelló, "because their childhood has been stolen. From a tender age, they take in information for adults."

How Seal Moms and Pups Find Each Other

When mother seals return home after weeks of feeding at sea, the moms and their newborn pups must find each other in a noisy crowd of hundreds of other adult and baby seals. How do they do it? According to *The Vancouver Sun* of Canada, "pups learn to recognize their mother's voice in as little as two days after they're born and mothers quickly learn to identify their baby's call." A study conducted on Amsterdam Island in the Indian Ocean showed that "mom and baby can find each other in just seven minutes after mom's return from her first trip to sea," says the *Sun*. "A mother will feed only its own pup and can be very aggressive towards other pups," says Dr. Isabelle Charrier, who carried out the study, "so it's very important for the pup to recognize its mother."



From Our Readers

Values I was surprised by the statement in the opening paragraph of the second article of the series "What Has Happened to Values?" (June 8, 2003) It stated: "Among the greatest gifts parents can give to their children are unconditional love and a set of values that the parents live by." When children and adults act as if they are entitled to one another's love, values will always decline.

K. B., United States

"Awake!" responds: The phrase "unconditional love" was used to suggest that parents should not imply that their love

for their children is fragile or tenuous—that it might be withdrawn at any moment because of some failing on the child's part or that the child is obliged to earn parental love by doing everything just right.—Ephesians 6:4; Colossians 3:21.

I found the final article in this series to be exceptionally well written. The material is so simple, logical, and encouraging. The picture is beautiful. Thank you for such comforting articles.

M. P., United States

Water Thank you for the article "Life's Precious Liquid—Water." (June 8, 2003) This article quoted an obesity specialist who suggested that healthy people should drink eight to ten 8-ounce glasses of water each day. However, if a person has heart failure or reduced renal function, doctors advise patients not to drink too much water.

T. A., Japan

"Awake!" responds: Recommendations on this matter tend to vary. Some experts say that in certain situations water intake should be limited. It would be wise to consult one's personal physician for further advice.

Postpartum Depression I am a mother, and I have a precious little girl who is only one year old. I had never felt Jehovah's hand as close to me as I did when I opened *Awake!* and read the article "Under-

standing Postpartum Depression." (June 8, 2003) I do not have enough words to express my gratitude for this article. I deeply appreciate belonging to a group that tenderly cares for each one of its members. Thank you, thank you!

M. G., Spain

Crossword Puzzle Thank you for the June 8, 2003, *Awake!* I found the treasure I look forward to—the crossword puzzle! I've been one of Jehovah's Witnesses for about four years, and I have done almost all the puzzles that have been published in that time. It's a great way to get to know the Scriptures. Keep up the good work. I look forward to doing more of your puzzles in the future!

K. G., United States

Senses Thank you for the series "Life's Amazing Senses—Do You Appreciate Them?" (March 8, 2003) Our senses truly help us to appreciate life and our environment. Articles like these strengthen our love for God. Thank you for publishing them.

J. N., Burundi

Materialism I would like to thank you for the article "The Bible's Viewpoint: What Is Materialism?" (April 8, 2003) It is true that many people today are obsessed with being well-off materially, and unfortunately, this problem can also affect Christians. This article helped me to understand what materialism is and how to avoid it. Now I will do everything possible to concentrate on spiritual things and not on material things. Many thanks for publishing such an instructive article!

Z. K., Russia

OUR PLANET

WHAT IS ITS FUTURE?

"While humans for millennia have feared 'acts of God' such as deluge and drought, they now are vulnerable to much worse: 'acts of man' played out through nature," reports the *Globe and Mail* newspaper of Canada. The United Nations Environment Programme (UNEP) released a comprehensive report urging action to correct environmental woes before it is too late. Executive director of UNEP, Klaus Toepfer, says: "We know enough now to see how our actions or lack of actions might shape the environment and the inhabitants of this extraordinary blue planet by 2032."

Some environmental progress has been made since UNEP was established in 1972. As reported in *The Toronto Star*, "the quality of air and river waters has improved in Europe and North America, and checks on chemical emissions have made it possible for recovery of ozone layer damage." Also, forest management programs, such as those in Canada, Finland, Norway, and the United States, "are ensuring that the impact of over-harvesting of timber will be reduced." Even so, the UNEP report says that if economic growth continues

unchecked and more of the earth's surface is absorbed into cities, this will have a disastrous effect on wildlife and biodiversity. The *Globe* stated: "About half the world's rivers are polluted or seriously depleted. Eighty countries holding 40 per cent of the world's population have serious water shortages."

Toepfer believes that "decisive action can achieve positive results." He adds: "We need a concrete action plan . . . concrete projects . . . and above all a clear declaration." But what hope is there if world leaders are resistant to acting in the best interests of the planet?

Be assured, there is one who has made "a clear declaration" and who will take "decisive action"—Jehovah God. In fact, he has gone on record unambiguously stating that he will intervene and "bring to ruin those ruining the earth." (Revelation 11:18) Furthermore, God assures us that earth's ecosystems will be restored. The deserts will blossom. (Isaiah 35:1) Food will be plentiful. Rivers will be free of pollution. (Psalm 72:16; 98:8) God guarantees a blessing for every living thing on earth.
—Psalm 96:11, 12.

NASA photo



How Much Can Your Child Learn?

■ Adults are often unaware of a child's capacity to learn. Yet, children usually learn a new language faster than their parents. By the time they are four years old, some speak two or more languages. Last year, Rhonda, a woman from Auburn, Washington, U.S.A., who had questioned a child's capacity to learn, wrote: "Thank you for allowing me to admit that I was truly wrong."

Rhonda explained that she had come across an experience in the August 1, 1988, issue of *The Watchtower*, our companion magazine, and stated: "On page 13, there is a comment from a mother of a boy four and a half years old who said that when she was reading from *My Book of Bible Stories* and paused, her son continued the



story word for word. She added that he had memorized the first 33 stories of the book, including difficult names of places and people. I have to admit that at the moment, I thought to myself that it was impossible. Well, I was wrong. I am now the mother of a four-year-old daughter who has herself memorized many of the stories from the *Bible Stories* book."

An illustration showing Jesus standing over a tomb. He is wearing a white robe and has long hair. Lazarus, who appears to be a young man, is lying in a stone sarcophagus. Other people, including women in traditional robes, are watching from behind. The scene is set outdoors with trees in the background.

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