

Awake!



FORTUNE-TELLING

—Can it really help you?

ALSO IN THIS ISSUE:

Can You Get By for Less?

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

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

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

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

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

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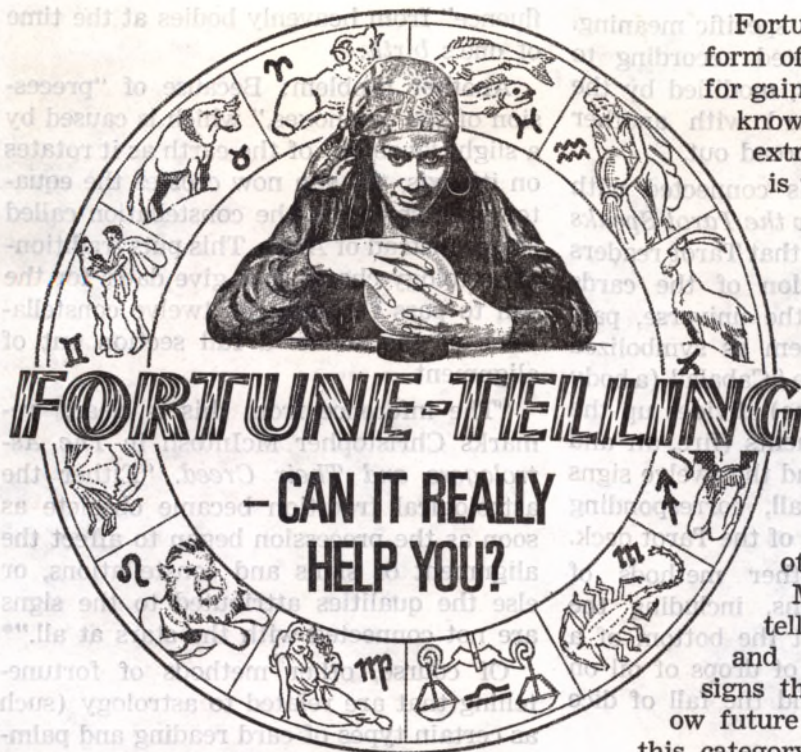
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"I READ your life like an open book."
"I answer all questions." "Bring your problems to me and I will solve them—no matter what your problems may be."

These claims were made by a fortune-teller in a leaflet advertising her services.

Many people take such claims seriously. Throughout the world fortune-tellers enjoy a flourishing business. Some individuals visit one every day and will not make any big decision without such a consultation.

What is fortune-telling? Can it really answer vital questions and solve problems? Can fortune-telling help you?

Methods of Fortune-telling

Fortune-telling, according to *The Encyclopedia Americana*, involves "predicting one's fortune or future, by alleged signs or indications seen and interpreted by amateur or professional diviners."

Fortune-telling is, therefore, a form of divination, a procedure for gaining knowledge of the unknown or of the future by extraordinary means. That is why the names of many of its methods end in *-mancy* (from the Greek *man-tei'a*: "the mode of divination"). There are, for example, *cartomancy* (fortune-telling by cards), *chiromancy* (by the lines of one's hand) and *crystallogomancy* (by use of a crystal ball or other transparent object).

Many methods of fortune-telling involve looking for and interpreting omens or signs that supposedly foreshadow future events. Astrology is in this category. The sun, moon, stars and planets are said to affect earthly and human events. Each star group and each planet is assumed to exert a particular influence, positive or negative. Astrologers cast a "horoscope" or chart of the positions of the heavenly bodies relative to one another at the time of a person's birth. From this they claim to be able to read his personality and destiny.

Palmistry is a way of fortune-telling by examining the lines and other characteristics of the palm of someone's hand. Showing a close connection with astrology, palmists speak of the hand as having "mounts," named after the seven planets known to ancient astrologers.

Some fortune-tellers work with Tarot cards. These special cards include 22 "Tarots" (or trumps) and 56 numeral cards. The numeral cards are divided into four suits. Each suit is given an overall sense

and each card is given a specific meaning. The cards are interpreted according to their assigned meanings, modified by the combination of one card with another when dealt, drawn or spread out.

Tarot reading, too, is connected with astrology. The book *How the Tarot Speaks to Modern Man* explains that Tarot readers "base their interpretation of the cards upon the structure of the universe, particularly the solar system as symbolized by the Holy Cabala." The "Cabala" (a body of Jewish occult doctrine) divides up the universe into three elements (fire, air and water), seven planets and the twelve signs of the zodiac—22 in all, corresponding with the 22 trump cards of the Tarot deck.

There are many other methods of fortune-telling by omens, including the way tea leaves settle at the bottom of a cup, the configurations of drops of oil on the surface of water and the fall of dice or dominoes.

A Scientific Basis?

Does such a quest to know someone's personality traits or the future by omens have a scientific basis? Evidence for this is entirely lacking. Says the book *The Biological and Social Meaning of Race*: "The possible number of different combinations of genes that a single human could inherit is greater than the number of atoms in the universe." An individual's traits, his way of thinking and the decisions that govern his future also involve his environment and culture.

Could there be any significant correspondence between someone's personality or future and the fall of a pair of dice (which presents only 36 possibilities), the settling of tea leaves or any other random occurrence? And the fact that personalities are largely determined by heredity at the time of conception rules out any "in-

fluence" from heavenly bodies at the time of one's birth.

Another problem: Because of "precession of the equinoxes," which is caused by a slight "wobble" of the earth as it rotates on its axis, the sun now crosses the equator each spring in the constellation called Pisces instead of Aries. This puts traditional astrology charts that give dates for the sun to pass through the twelve constellations of the zodiac a full section out of alignment.

"The inference from this is clear," remarks Christopher McIntosh in *The Astrologers and Their Creed*. "Either the astrological tradition became obsolete as soon as the precession began to affect the alignment of signs and constellations, or else the qualities attributed to the signs are not connected with the stars at all."*

Of course, other methods of fortune-telling that are related to astrology (such as certain types of card reading and palmistry) are equally devoid of scientific basis. That is why the predictions of fortune-tellers are so often wrong.

"But they are not always wrong," someone may object. This is true. On occasion, some fortune-tellers have been amazingly accurate. But if their methods are not scientific, what accounts for this accuracy?

A Mysterious Force

Here it is interesting to note an expression of the well-known fortune-teller Jeanne Dixon, who sometimes uses a pack of cards to tell fortunes: "I don't know a single thing about telling fortunes with cards. I simply have a person hold them so that I can pick up his vibrations." Similarly, the book *Patterns of Prophecy* (1973) says concerning palm reading: "Palmists seem to derive their most astute impressions not from the lines of the hand,

* For a fuller discussion of astrology, see the November 22, 1973, issue of *Awake!*, pages 3-7.

but from touching the person to make psychic contact. . . . a number of German palmists were unable to make accurate statements about people's characters when only photocopies of the handprints were presented to them."

Thus it is not the heavenly bodies, the cards, someone's palm or any other omens that result in the occasional "direct hits" of fortune-tellers. Their successes are principally due to a mysterious "psychic force."

Such a strange power is involved in several other methods of probing into the unknown or the future. An example is *cleidomancy*, or divination by a key held suspended on a thread. When asked questions, the key may revolve or move back and forth to indicate "Yes" or "No" answers or to provide other types of information. Some substitute another object, such as a pendulum, in place of a key. At times such devices, when held over a map, have pointed out the location of hidden or lost objects and missing persons. When dangled above letters of the alphabet laid out in a circle, the pendulum has been known to move toward certain ones in succession to spell out a message.

Similar is the Ouija board, which contains the words "Yes," "No," "Good-bye," the letters of the alphabet and the numbers 1 through 9 and 0. Atop this sits a heart-shaped device mounted on three felt-tipped legs. When consultants put their hands on this, a force causes it to move about the board, spelling out words and sentences that can provide information not previously known to the persons using the board.

The same principle operates in the case of the planchette, which is a triangular or heart-shaped board mounted on tiny wheels with a pencil projected downward. One or more persons place their fingertips

on the board and a mysterious power causes it to write.

What is the force that enables fortune-tellers to make correct forecasts on occasion or to obtain accurate information that they could not normally know? What makes the pendulum, the planchette and the three-legged device atop a Ouija board move about in a way that communicates information not obtainable by normal means? What engenders visions in crystal balls that at times accurately describe the unknown or the future? Obviously there is an intelligently directed force at work. Scientists and psychic researchers are not sure what that force is. Would it benefit you to explore such a mysterious power? Would it help you to "try it just once" to satisfy your curiosity?

The Real Power Behind Fortune-telling

The Bible warns all who wish to win the approval of God to keep away from such a thing. God's view of the matter is set forth at Isaiah 1:13: "I cannot put up with the use of *uncanny power* along with the solemn assembly [for worship]." Commenting on the Hebrew word *a'wen*, here rendered "uncanny power," Johannes Pedersen, a professor of Semitic languages, writes:

"Properly speaking it denotes strength, but gradually it has chiefly come to be used of the false strength, the magic power, and therefore it has all the characteristics of sin." "[It] denotes the false strength, deeds involving disaster, witchcraft and magic arts."—*Israel: Its Life and Culture*, pp. 431, 448.

Other scriptures associate "uncanny power" with divination, which includes fortune-telling. (1 Sam. 15:23; Num. 23:16-18, 21; Josh. 13:22) Persons desiring to worship God acceptably must shun any involvement with such a force, for it does

not originate with God. Where, then, does it come from?

Pointing to the real source of much fortune-telling ability, the Bible, at Acts 16:16-18, relates:

"We met a slave girl who had a clairvoyant spirit. She used to bring substantial profit to her masters by fortune-telling. The girl began to follow Paul and the rest of us . . . She did this for several days until finally Paul became annoyed, turned around, and said to the spirit, 'In the name of Jesus Christ I command you, come out of her!'" —*The New American Bible.*

After the apostle Paul had expelled the "clairvoyant spirit," or demon, from this girl, her masters "saw that their source of profit was gone." (Acts 16:19, *NAB*) She had lost her fortune-telling ability.

It is clear from this that the Word of God links up the uncanny power behind fortune-telling with wicked spirit forces, or superhuman, invisible demons. (Eph. 6: 12) That is why God commanded his people to shun every type of divination, saying:

"There should not be found in you anyone who . . . employs divination, a practitioner of magic or anyone who looks for omens or a sorcerer, or one who binds others with a spell or anyone who consults a spirit medium or a professional foreteller of events or anyone who inquires of the dead. For everybody doing these things is something detestable to Jehovah."—Deut. 18:10-12.

All forms of divination, whether by interpretation of omens or by some other use of psychic power, are covered by that prohibition.

Can It Help You?

Do you think that something that God directly condemns in his inspired Word could help you? Actually, fortune-telling could do considerable harm. How so?

One reason is given in *The World Book Encyclopedia*: "Such a belief may rob a person of trust in himself and his own

ability. He may begin to look on himself as a 'pawn of fortune' who cannot change his fate. He then may lose ambition."

More importantly, since fortune-telling involves the use of "uncanny power," which God condemns, it brings His disfavor, making a person "detestable to Jehovah," preventing him from having an acceptable relationship with God. (Deut. 18:12) Moreover, the Bible associates prediction of the future by fortune-tellers with the influence of demons. Dabbling in fortune-telling can open up one to harassment from the invisible realm.

No genuine good, therefore, can come from seeking the guidance of fortune-tellers or reading literature designed to help people to develop psychic powers. Christians do well to follow the example of persons of the first century C.E. whom the Lord Jesus Christ favored because they "did not get to know the 'deep things of Satan.'"—Rev. 2:24.

For those who may already be involved in practices like fortune-telling, the Bible contains the following helpful example: "Many of those who had become believers would come and confess and report their practices openly. Indeed, quite a number of those who practiced magical arts brought their books together and burned them up before everybody." (Acts 19:18, 19) People who became Christians made a clean break from such practices.

Fortune-tellers with their psychic abilities cannot help you to know God and his requirements for acceptable worship. Nor can they provide sound guidance for everyday life and a sure hope for the future. That information is found only in the Holy Bible, which is truly "inspired of God." (2 Tim. 3:16; Ps. 119:105; Isa. 46:10) It is study of the Word of God, therefore, and not the consulting of fortune-tellers, that will truly help you in your life.

I CHOSE TO RUN IN THE



Race for Life

I WAS born in a small town in Eritrea, Africa, in 1947. When my mother died two years later, I was entrusted to the care of my grandfather, a priest of the Orthodox Church.

As I grew older, religion became my principal interest. I, too, desired to become a priest. So grandfather placed me in a school to prepare me.

Often I prayed to God to help me to reach my goal of becoming a priest. I asked for a sign to indicate that my prayers were heard. When I did not receive any, I became disappointed. In time I came to feel that God did not exist.

So in 1960 I decided to leave school. After four days of traveling on foot, I arrived at home. You can imagine my grandfather's reaction. However, I remained firm in my decision not to continue my studies for the priesthood. My attention turned elsewhere.

Career as a Cyclist

I found work as a bicycle mechanic. This led to an interest in cycling. Could I become a champion cyclist? This became my desire. Yet I could not even enter a race, because I did not have a bicycle, nor did I have enough money to buy one. So I determined to build one myself.

With the bicycle built with my own hands, I entered my first race. I did not win. However, I did so well that the trainers of a squad of cyclists who saw me presented me with a bicycle so that I might

enter the next race on the program. Shortly afterward I took part in a race at Asmara, the capital of Eritrea, and won.

For four years I raced in Eritrea, benefiting from the help of an Italian trainer. I went on from one victory to another, winning a total of forty cups and ten medals. It was at this time that they began calling me "Giant," partly because of my stature and partly for my victories. I was known by this nickname more so than by my real name.

My reputation became known abroad, and I was invited to take part in bicycle races in Italy, Spain, France, Yugoslavia, Germany and Mexico. I won many of them. In Italy alone I won thirty cups and twenty medals.

Although I had become one of the fastest cyclists in the world, something was wrong. I did not feel satisfied or happy. Something had changed in me. I was losing interest in sports. I had begun to appreciate that there was something much more important than bicycle racing.

Then the opportunity that I had awaited for years finally arrived—the Pan African games, a kind of African Olympics. They were scheduled for January 1973 in Lagos, Nigeria. It had been my cherished dream to participate in such high-level international competition. But, strange as it may seem, now I did not really want to go.

However, the Ethiopian government sent me ten telegrams inviting me to represent Ethiopia in the games. Finally I decided to go, but I was determined to quit sports after these games were over. I was very successful in the competition, winning two gold medals, one in a regular bicycle race between individual contestants, and the other in a timed race. But then I made clear my determination to quit racing altogether.

The news of my quitting quickly reached the then emperor of Ethiopia, Haile Selassie. On hearing it, he summoned me to appear before him as soon as I returned from Lagos late in January. Our conversation lasted about half an hour. He tried to convince me to continue racing so as to maintain high the name of Ethiopia. He promised me land and riches. He also offered me the opportunity to become a trainer of cyclists. I refused.

What, you may wonder, had influenced my decision? Why had I lost my consuming interest in cycling?

A More Important Race

It is because I had come to appreciate that another kind of race is more satisfying and rewarding than bicycle competition. When I left my studies for the priesthood back in 1960, a relative in Asmara first spoke to me about the Bible promises of a new system of righteousness of God's making. (2 Pet. 3:13) At the time this information did not particularly impress me, since at school I had become disappointed with religion. Besides, by then I was deeply interested in bicycle racing.

However, about ten years later I accepted an invitation to study the Bible with one of Jehovah's witnesses in Ethiopia. I also began attending some of their Christian meetings. Later, when I traveled to Italy to participate in bicycle races, I con-

tacted a congregation of Jehovah's witnesses. Thus I continued my meeting attendance and Bible study, this time with ever-increasing interest.

I became impressed by the fact that Almighty God really does purpose to create a new system, and that He is now preparing a people who will survive to enjoy its blessings when He brings this old world to an end. (1 John 2:17) I began to see the importance of living for that new system now, making it my goal in life and telling others about it. Since I was deeply involved in racing, these words of the Christian apostle Paul at 1 Corinthians 9: 24-27 particularly impressed me:

"Do you not know that the runners in a race all run, but only one receives the prize? Run in such a way that you may attain it. Moreover, every man taking part in a contest exercises self-control in all things. Now they, of course, do it that they may get a corruptible crown, but we an incorruptible one. Therefore, the way I am running is not uncertainly . . . that, after I have preached to others, I myself should not become disapproved somehow."

In a certain sense I saw myself described by these words of Paul. But I was in the wrong race! I had been racing for a prize of little value—worldly fame and riches. Now I realized that it was possible to run the Christian race for the prize of *eternal life*.

Thus, when the Pan African games were over, I began sharing publicly in preaching to others regarding God's purpose to usher in a new system of righteousness. I remember the exact date when I began to preach; it was February 1, 1973, about fifteen days after my two victories in the Pan African games.

What joy I find now in using my physical strength—not in racing for some fading, corruptible prize—but in running in the race for the prize of eternal life that Jehovah God will give to all those who continue loving him. (Jas. 1:12)—*Contributed*.

Your Clothing

—HOW TO KEEP IT AS GOOD AS NEW

WHAT has no mouth but “talks” about you all the time?

Your clothes! Yes, your wardrobe reflects your attitude toward yourself, your family and even your employment. And, to a great extent, it is not money that makes it possible to be well dressed; it is knowing how to care for your garments.

Besides your appearance, there is another reason for caring for your attire—clothing is getting more expensive. Since you may buy fewer new clothes, it becomes more important to keep your present wardrobe in good condition.

But how do some people manage to look so fresh and neat while others look so crumpled? What does the properly attired person do to keep his or her clothing as good as new?

Daily Care

The secret to proper clothing care is *daily concern*—cultivating good habits in handling your clothes. Probably the most important is the regular use of clothes hangers. Clothes thrown in a pile get wrinkled and do not receive needed air. Apparel hung on a hook or a nail often stretches.

So, do not only use a hanger, take a moment more to see that the item hangs straight, and then fasten the top button or snap. If your clothes-closet rod is so crowded that nothing can hang straight, then make adjustments. Perhaps another rod can be installed.

After you place a jacket, coat or other

heavy garment on a hanger, it might be beneficial to give it a quick brushing with a clothes brush or a whisk broom, especially around the collar. Also, occasionally brush inside cuffs and pockets. Dirt brushed out cannot become embedded, and so regular brushing will add to the life-span of most apparel.

A notable exception to the hang-it-up habit is sweaters and some other single-knit garments. If hung, they tend to stretch. So, after wearing a sweater, it is best to turn it wrong side out, lay it by an open window and air it for a few minutes. Then turn it right side out and fold it neatly and put it in a drawer.



Of course, proper storage will not solve the calamities that may befall you while wearing a garment. Have you ever been “attacked” by spaghetti sauce? Or have you had chocolate ice cream skip merrily down the front of your new white dress?

Yes, stains can be a real obstacle to keeping your clothing like new. Stain removal is really included in daily clothing care, because the best time to tackle a

stain is *immediately*—if possible, before it dries.

To remove a stain you need to know how to remove the particular kind of stain from the kind of material that is involved. With this article are directions on removing some common stains from most fabrics. Before applying anything else, try cool water; it will not set the stain. (Many nonwashable fabrics are not damaged by small amounts of water.) When treating a stain, it is best to use light strokes.

If you must use a solvent of any kind, use as little as possible. Do not breathe the fumes, and keep the bottle beyond the reach of children. Too, before applying a solvent or a chemical remover to a colored fabric, test the remover by dabbing some on an inside seam to see if it fades the color.

Weekly and Seasonal Care

Clothing needs a regular program of maintenance to remove dirt and wrinkles. How often your clothes need to be washed depends on how frequently each garment is worn. But most families find a weekly laundry time necessary. Read the labels carefully so you will know how to handle each article. You find it best to separate dirty clothes into three groups—those requiring dry cleaning, those requiring washing and ironing, and those requiring only washing (such as “permanent press” garments).

When gathering garments to take to the dry cleaner, inspect them for frays, missing buttons and small tears. Either repair them then or make a note so that you remember to fix them later. Further, says Margret Hanson in *The Care We Give Our Clothes*: “If there are any stains, write on a piece of paper the cause of each stain. Pin the notes to the stains with safety pins. If you do this, your dry cleaner will know how to remove each stain.”

As for those clothes you wash, whether by machine or by hand, it is first necessary to remove any stains. In addition, it is good to keep in mind that clothes will last longer if you strive to keep their fiber strength. Two tips on that: When hand-washing, treat the garment gently and do not wring or twist it too much. Secondly, rinse everything thoroughly so that you remove all traces of soap or detergent.

Some items that you may think of as needing dry cleaning can actually be washed at home if you are careful. For example, take a wool sweater that needs cleaning and spread it out on a clean piece of paper (not newsprint). Quickly trace the shape of the sweater on the paper. You can then wash the sweater in cold water with special cold-water soap or in soft, lukewarm water and mild suds. After rinsing it two or three times in water of the *same* temperature, gently squeeze out the moisture. Then roll it in a towel, to absorb more water. Now shape the sweater to your drawn outline and leave it on the paper to dry in a place away from heat and sunlight.

Of course, even if your clothes are clean you do not look well dressed if they are wrinkled. Many garments require ironing after each washing. Other garments, however, need frequent pressing. If you do this yourself instead of sending them to the dry cleaner, you will save considerable expense. Pressing differs from ironing in that the iron is lifted up and “pressed” down on the fabric instead of being slid across it. This is usually done on the underside of a garment but may be done on the “right” side if a pressing cloth is used.

Seasonal care of your clothes is mainly a matter of proper storage so that when you want them again they are in usable condition. The key is: (1) A dry, clean storage place and (2) all garments cleaned before storing. You see, moths prefer dirty

wool, and mildew (a tiny plant) likes damp, warm places. Also, it is better not to starch clothes before storing, as starched clothes will mildew faster than those that are not. If it is not possible to dry-clean certain garments that you are storing, the next-best thing is to air them thoroughly and brush them inside and out. By doing this you may brush the moth eggs or larvae away. Store your clothes, whenever possible, in airtight boxes, bags, drawers or chests.

But, someone may reason, 'Even if I do

all of this, clothes tear; they get old and wear out eventually.' This is true, but do not be hasty about throwing away a damaged garment or an old one.

Repair and Remodeling

Anyone, including bachelors, can learn to make simple clothing repairs. If you stop a small rip from tearing farther, you may save an expensive garment. There are books at many libraries on patching and reweaving fabrics. And, as with any job, you need the right tools—so keep a box

REMOVING COMMON STAINS

Type	Washable Fabrics	Nonwashable Fabrics
BLOOD	Soak in cool to lukewarm water. Wash with detergent. Rinse. If necessary, put a few drops of ammonia on stain and wash again.	Sponge with cool water. If stain remains, apply detergent and rinse spot.
CHEWING GUM	Chill with ice cube; peel gum off. If stain remains, sponge with dry-cleaning solvent (perchloroethylene).	Same procedure, except wrap ice cube in wax paper or plastic.
CHOCOLATE	Treat with cool to lukewarm water. If stain has dried, sponge spot with lukewarm water and a mild detergent.	Same procedure.
COFFEE OR TEA	Soak in cool water. Then soak in warm water and wash with detergent. Rinse.	Sponge with cool water. Apply detergent. Rinse spot. If cream was in coffee or tea, use dry-cleaning solvent.
INK (ball-point), GREASE, LIPSTICK (and most cosmetics)	After pouring dry-cleaning solvent on stain, use a cloth to absorb as much stain as possible. Allow solvent to evaporate, then sponge with liquid detergent. Rinse well.	Sponge carefully with dry-cleaning solvent, using a cloth to absorb as much stain as possible.
PAINT (oil-based), VARNISH	For fresh stains, rub in detergent and wash. For dry stains, sponge with turpentine or paint thinner and, while stain is wet, rub detergent into it. Then soak it overnight in hot water. Wash again.	Sponge with turpentine (if safe for fabric) or sponge with dry-cleaning solvent.

or basket of mending equipment. Always include a supply of extra buttons; a safety pin where a button is obviously supposed to be will certainly not be attractive.

But what about a bad rip or an ugly stain that will not come out? Here is where your imagination can be tested. Especially with women's clothing is it relatively easy, for example, to sew a series of cloth triangles or other designs down the front of a dress. And one of those triangles can go right over that rip or stain!

Similarly, it is often the collar of a garment that first becomes worn or soiled. Why not remove it and either cut a different collar design for the garment or make a new collar from a complementary fabric. You thus eliminate the problem and at the same time give the outfit a new look.

Once you study the possibilities, the variations are endless. Long-sleeved shirts can become short-sleeved shirts. An old

dress can be turned into a skirt or a jumper. A dress with a bad stain on the skirt can be cut off and made into a blouse. Never underestimate what new accessories—such as a scarf, belt or decorative pin—can do for a not-so-new garment. Viewing it as a creative challenge, and daring to experiment, you may find that you are happier with the “remodel” than you were with the original!

When reviewing your wardrobe, note which fabrics have kept that good-as-new look the longest. Then, when shopping, buy with an eye to durability.

Moreover, while it is not wise to become overly anxious about what to wear, remember that often, before you open your mouth to speak, your clothes have “spoken.” A neatly attired person will usually find greater respect and consideration from others—all the more reason to care for your clothing.

Putting **NUTRIENTS**

Back into the Soil

DO YOU live in a food-growing area? If so, desert and famine conditions may seem like hundreds, even thousands, of miles distant. But that is not true.

Really, food shortage is no more than inches away from any place on earth.

It is only as far removed as the depth of the soil. Should a few vital inches of

topsoil be removed from the earth, all life on it would eventually end.

Actual soil erosion is stealing much precious topsoil earth wide. For instance, African nations admit that soil erosion is



a major problem. Says the Ethiopian *Herald*: "Tons after tons of earth are washed away every day from our highlands to neighboring countries so that our fields are gradually becoming sterile. With low fertility they can provide only low yields."

But soil effectiveness can be crippled in another way: Nutrients can be taken from it and not be replaced, thereby greatly diminishing its ability to grow crops. To understand how this can happen requires that we first of all understand the makeup of soil.

What Is Soil?

Soil is, according to one simple definition, where food is grown. Experts know that not all soils are the same; each has its own history and unique value.

Ordinarily, geologists assert that soil comes from rock that has been ground down through millenniums of time, producing in the process vital minerals for the soil. No human, of course, was around to witness this assumed lengthy process. It is said that rock slowly crumbles under the influence of water and weather and other conditions. Obviously such things do have an effect on even the most stubborn rock. But are the vast periods of time that geologists talk about really necessary to have produced soil?

Not all geologists seem to think so. Thus in 1963, when the island of Surtsey was born in the Atlantic Ocean, *National Geographic* magazine reports: "Surging surf ground jagged lava into rounded boulders with a speed that astonished geologists attending Surtsey's birth." A few years at most, not countless aeons of time, was all that was involved. Also, volcanic ash accounts for much of the fertile soil of Indonesia and other lands, and it, too, is deposited quickly.

Most importantly, the Bible indicates that earth's soil was formed rather quickly.

It speaks of the dry land and vegetation as all appearing within one creative "day"—a period that the Bible indicates was seven thousand years in length. (Gen. 1: 9-13) Appropriately, *The Encyclopedia Americana* asks: "How long does it take to produce an inch of soil—an inch of fine rock material that supports plants? One may say a few minutes or a few million years. It all depends upon the exact spot and what stage in the cycle we reckon from."

Of course, there is much more to soil than just ground-up rock. Otherwise it would be like sand, unable to maintain plant life of any size. To grow plants soil must have humus; humus is produced as plants and animals die and their remains decay. Valuable nutrients that will nourish later plants and animals result from this process of death and decay. Animal droppings also supply nutrients.

How Nutrients Are Produced

All together, it appears that at least sixteen elements are needed for plant life to be sustained. Three of these sixteen are taken from the air: carbon, hydrogen and oxygen.

But the other thirteen come from the soil: phosphorus, potassium, nitrogen, calcium, magnesium, iron, sulphur and traces of boron, manganese, copper, zinc, chlorine and molybdenum. The first three of these thirteen are considered "primary elements." Where appreciable amounts of these thirteen elements are taken from the soil, they need to be replaced so that other healthy plants can appear in the future.

How does soil naturally act on dead organic material to make it usable by plants? Living organisms convert it into forms that can be employed by plants.

A thimbleful of soil contains billions of living organisms, each of which contributes

to the vitality or fertility of the soil. In the top layer of soil is where most of these organisms thrive.

Among the larger ones are earthworms, considered the most valuable of all soil invertebrates. They not only break down much of the debris on the earth's surface, but also turn the soil over and aerate it.

Highly productive soils also generally have an abundance of *microorganisms*, bacteria, fungi, actinomycetes, algae and Protozoans. When a plant or an animal dies, its sugars, starches, cellulose and similar compounds are consumed by certain of these organisms. They, in turn, produce carbon dioxide in the soil and also reduce the dead matter to a form that plants can use. When carbon dioxide combines with moisture, carbonic acid is formed; it, in turn, does some of the work of dissolving minerals in the soil.

Nitrogen is vital to the life of plants. It has been estimated by Harry A. Curtis of the Tennessee Valley Authority that there are about 34,500 *tons* of atmospheric nitrogen over every acre of land area; that makes up about four fifths of the atmosphere. However, plants cannot directly use this nitrogen in its free gaseous state.

Rather, it must be combined with other elements or "fixed." One of the ways that nitrogen is fixed for use by vegetation is by means of microscopic plants living on the roots of certain plants such as legumes.

However, when men grow a large acreage of crops, a tremendous amount of nutrients is extracted from the soil. One experiment at a Maine agricultural station found that in an acre of potatoes there are about 143 pounds of nitrogen, 26 pounds of phosphoric acid, 232 pounds of potash, 56 pounds of calcium oxide, 30 pounds of magnesium oxide and 11 pounds of sulphur.

Obviously, to restore these nutrients more is necessary than just allowing matters to take care of themselves "naturally."

Otherwise the soil grows weak and, in time, actually becomes infertile. Expert care of soil will not only keep it fertile but result in maximum yields. How can nutrients be restored to farmland?

Restoring Nutrients to Farmland

The first thing that a soil expert will ask is: 'What is the soil's pH?' But just what does "pH" mean?

Well, soils are put into two basic categories: acid or alkaline. On a scale of 0-14 those soils falling into the 0 through 6 category are acid, while those above 7 and through 14 are considered alkaline. Soils that are 7 are considered neutral, neither acid nor alkaline.

Some crops prefer soils that are somewhat more acid, and others, more alkaline. Lime, when added to the soil, makes it more alkaline, that is, raises its pH.

Even if all the thirteen nutrients needed by plants are in the soil, a proper acid/alkaline balance is still necessary. Only in this way will plants be able to benefit fully from the nutrients that are in the soil.

Lime added to the soil does at least three things. It supplies needed calcium oxide. Secondly, it keeps some elements in check so that these will not poison the crop. Thus as the pH of acid soil is increased by adding lime, such elements as aluminum, iron, manganese, copper and zinc become less soluble. In more acidic soil the excessive presence of these elements will be harmful to crops, but as the pH of the soil is increased they become more inert. Thirdly, lime releases other elements that the plants can use to good advantage, while encouraging the growth of vital bacteria in the soil.

Since each soil is different, it is vital to consider what each one needs in the way of added nutrients. The primary ones, nitrogen (N), phosphorus (P) and potassi-

um (K), are the substances represented by the three sets of figures on a bag of commercial fertilizer. For instance, 10-12-8 stands for the percentage of nitrogen (10%), phosphorus (12%) and potassium (8%) in the bag.

Where do these fertilizers come from?

Today many farmers and gardeners say that they prefer to use only "natural" organic fertilizers such as manure, sewerage, sludge and compost to provide needed soil nourishment. The use of these products has long been recognized as a fundamental way of returning nutrients to the soil while at the same time adding humus. It is still a very common way of fertilizing soil in Asia, Africa and Latin America.

But much fertilizing done in the Western world today is on a very large scale. It is not possible to provide enough organic fertilizer for these gigantic operations. Fertilizing just one acre of land can require fifteen tons of animal manure. Obtaining such amounts is virtually out of the question for most farming operations today. So what is the alternative? "Chemical fertilizers."

Some persons claim that chemical fertilizers are harmful if used to promote growth of food for humans. But a report by the U.S. House of Representatives notes: "No reliable evidence was presented that the use of chemical fertilizers has had a harmful or detrimental effect on the health of man or animals." Nor has it definitely been proved that such chemicals, if used properly, harm soil life. Even "organic" gardeners use some rock powder, including rock phosphate, potash rock and crushed limestone, to build up the soils.

One farmer who has relied on chemical fertilizers for many years reasons: "The plants do not care where the nutrients come from, just as long as they get them." Similarly, honest "organic" gardeners know too that a balanced view toward

plant nutrition must be maintained. Says *Organic Gardening and Farming*: "There's little agreement among soils experts on the comparative merits of natural fertilizers (nor on chemical fertilizers either, if the truth be known). Natural fertilizer makers call university agronomists lackeys of the petro-chemical industry . . . University scientists retaliate by labeling soil-conditioning salesmen as hucksters selling bags full of magic and hot air. There is no doubt some truth in both criticisms . . . Honest men stand on both sides of the fence."

But how do men produce the "primary elements," nitrogen, potassium and phosphorus, in chemical fertilizers?

Their main source of nitrogen is synthetic ammonia. This comes as a result of combining nitrogen and hydrogen. Pure gaseous nitrogen can be obtained with relative ease by removing from the air oxygen and other gases. Hydrogen is a byproduct of petroleum. Synthesizing the two results in the needed ammonia. Some ammonia is put directly into the soil as a watery solution. However, most is converted into a solid and used by farmers and gardeners in that form. Most phosphates and potassium come from mineral deposits that are ground to the proper consistency.

Future of the Soil

Men have made and continue to make some very foolish mistakes in the way they deal with the earth. But, if properly cared for, the soil can produce crops indefinitely, even as noted in a *Farm Journal* editorial: "Soil that is properly fertilized and managed is not being used up. It is a renewable resource, as proved by the lands in Europe and Asia which have been cultivated continuously for thousands of years."

Yes, this valuable "resource"—a few inches of soil—must be kept healthy to grant its greatest yield.

CAN YOU **GET BY FOR LESS?**

PRICES keep going in one direction—up! The soaring cost of living today threatens to wipe out what little savings some have managed to scrape together. Especially hard hit are people on fixed incomes.

Is there anything that you can do to neutralize the impact of rising prices? Let us consider approaches to the problem that certain persons have found practical.

Must You Have It?

When thinking of buying something, you will find it profitable to ask: "Do I really need it?" Does the use you get out of an automobile, for example, offset the expense of buying it, paying for insurance, keeping the car fueled and in good repair, not to mention the loss through depreciation? If you really do need a car, could you cut back on its use by planning errands in advance, or by occasional use of public transportation? And how about car pooling—not just for men going to work, but for friends arranging to go to market or to share in other activities?

Could you meet your clothing needs less expensively? When a housewife in Santiago, Chile, noticed one day that her coat was wearing out, she became perplexed, being unable to afford a new one. She explains: "One day I commented favorably about the coat of one of my friends. 'Oh,' my friend responded, 'this is just my old winter coat turned inside out.' I tried the same thing and found that it is not at all difficult to take a coat apart and sew it back together inside out. Simply following the old seam markings, along with some small changes in the collar and pockets, made my coat look like new."

When this frugal housewife notes that the elbows are wearing thin on sweaters, she switches the sleeves, exposing an entirely new area of material to the wearer's elbows. Could similar procedures save you money?

Can You Buy It for Less?

Even when you really need something new, you may get by for less by watching for sales. In some countries there is a yearly pattern to "clearance sales." By acquainting yourself with the pattern, you may achieve considerable savings.

While better stores have better sales, many try to move their sale materials quickly. They may sponsor one- or two-day sales at drastically reduced prices. A word, though, about quality: Better-quality goods, especially in long-term, heavy-wear clothing such as suits, will prove to be less expensive in the long run than clothes of poor quality at lower prices.

You gain further savings on clothes if you buy "imperfect" garments and repair them at home, or by buying secondhand items, which are often of better quality than new things at higher prices.

Have you ever tried bargaining for a better price? A housewife who is an experienced shopper relates:

"After living for two years in lands where bargaining for a better price was a daily procedure at the market, I returned to set up housekeeping in the United States, where the practice is almost unknown. Needing several lamps, I searched the newspapers for sales, finally locating one at a well-known department store. I winced, however, upon hearing the total price of the lamps that I wanted.

"It then occurred to me that I might bargain for a better price. Summoning the store's 'buyer,' I explained my needs and how I felt about the cost. We were able to agree on a better price. So, don't think that it is bad manners to bargain in this way. If there is nothing wrong with merchants raising prices, there is nothing wrong with customers trying to get them reduced."

Do you live in an area where you can purchase things through a mail-order catalog? This may result in considerable reductions on last season's merchandise, or items that have not moved well.

In many communities "trader" papers are distributed free to householders. These papers include a wide variety of things that local residents wish to sell or trade, sometimes at great savings.

Food Storage by Home Canning

Food costs are especially high today. Could you save money by storing food? An inexpensive way of doing this is home canning. The process destroys yeasts, molds and bacteria and also prevents chemical action that causes food to go bad.

Most home canning involves the use of glass Mason jars. A rubber ring fitted over the top of the jar serves as a "gasket." The metal cap is screwed down onto this, creating a seal that prevents air and bacteria from getting to the contents. In some countries people can buy special equipment for home canning, including jars, sealing lids and other utensils. However, if you live in an area where these things are not available commercially, you can improvise your own equipment. A housewife offers this advice that she personally tested:

"Save jars with screw-on lids. First,

though, run your finger around the topmost edge of the jars to make sure that they are completely smooth. Any nicks or cracks will prevent proper sealing. Then, from a source of rubber, such as a blown inner tube, cut out rings that will fit over the jar's opening. Test your workmanship by screwing on the lid. Does it fit tightly? Can you fill the jars half full of water and turn them upside down without leakage? If so, you are ready to begin canning at home."

Preserving low-acid foods, such as meat, poultry, fish and common vegetables, requires special steam-pressure canning equipment. But high-acid foods, including nearly all fruits and most (but not all) tomatoes, can be prepared simply with boiling water.

The first step is to wash all containers, rubber rings and lids in hot, soapy water. Rinse and boil these utensils, setting them out to dry in a place free from draft.

Be sure that the food you select is in perfect condition, without blemishes and not overripe. Place it snugly in the jars up to about one-half inch from the top and cover it with boiling liquid, still leaving about one-half inch of space at the top. The liquid may be juice from the fruit, plain water or may contain a small amount

of salt or sugar for flavoring. If you are canning tomatoes, you do not have to add any liquid. Just pack them tightly until they are covered with their own juice.

Make sure that the sealing surfaces are free of food particles that could prevent a tight seal; then screw the caps down tightly, provided they are the type that releases



Many housewives find that home canning helps

the pressure built up during cooking. The filled jars then go into a kettle of boiling water, deep enough to allow for one to two inches of water above the jars and another inch or two of space above the water level to permit vigorous boiling. The jars should rest upon a rack that raises them slightly above the bottom of the kettle so that boiling water may circulate under them.

Cover the kettle and let the contents boil. The time required for boiling will differ according to the type of food. Ten minutes is sufficient for tomatoes. Information on correct canning procedures can be obtained from good cookbooks, manufacturers of home canning equipment and from bulletins published by the Office of Information, U.S. Department of Agriculture, Washington, D.C. 20025.

When you remove the jars from the boiling water, set them upright on a towel or rack to cool. As the jars cool, watch to see if the center of the lid draws down, making it concave. If it does, and you handle your jars gently, the food will keep for months. If it does not, eat it in the immediate future, for it will not keep without refrigeration.

Could a Freezer Help You to Save?

Next to home canning, freezing is one of the most widely used methods of preserving food. Could a freezer help you to get by for less?

That depends on several factors. As pointed out in *Changing Times* of May 1974:

"On the average, a freezer costs around \$30 to \$50 a year to operate, so to net any savings, you'd have to save more than that on specials you were able to take advantage of because you had the freezer to store the food in or by growing foods you could freeze."

If you buy everything that you put into a freezer at retail prices, it is unlikely that

you will save. However, if you grow your own food, buy it in bulk quantities, or take advantage of special in-season sales, savings may result.

Food Preservation by Drying

Much of the earth's population preserves food by drying; and it need not require any equipment. Almost anything can be placed upon a clean surface or be hung up, perhaps covered by a thin cloth to discourage flies. The air and sun will do the rest. But what if the climate is too humid for this? An experience of a woman from the western United States is interesting:

"I had laid out some figs on racks to dry. But, as the humidity here was about 84 percent, some of them deteriorated. I had been baking, and the oven was still warm. I figured that the air in there would be dry enough. So in went the figs for 10-15 minutes under high heat. Then I turned it down low for an hour, and finally off, leaving them in there until the oven cooled.

"As some batches produced juice, I matched it with equal parts of sugar, brought it to a boil and dipped each fig and returned it to the rack for another brief session in the oven. When sticky dry, figs can be bagged (preferably in cloth) to hang in the air . . . for months."

You do not even need an oven for drying food. Roy Dycus, writing in *Organic Gardening and Farming*, points out: "A cardboard box can be converted into a drier for apples, peaches, beans, pumpkins, squash, beef and venison jerky, fruit leather, raisins, prunes and tomatoes. If you're in a hurry, it will even dry seeds and herbs." How is all that possible?

The article explains that food strips can be suspended on sticks that are run through the box from end to end. Heat for drying comes from a lightbulb that protrudes into one end of the box. Simple?

Saving money amidst rising prices is admittedly a challenge. But if you are willing to exchange convenience for hard work, you can get by for less.



WHAT ABOUT SALT?

LONG before the Creator brought the first human couple, Adam and Eve, together, he performed another marriage. What was that? As the Master Chemist he brought about the union between sodium (*Na*) and chlorine (*Cl*), resulting in common table salt. Thereby he changed two deadly poisons into a wholesome substance.

And what a widespread product salt is! All the oceans contain about 3 percent salt, while such seas as the Dead Sea have about 25 percent minerals, largely salt. In the United States, more than 85 million tons of salt are used annually by its food and chemical industries. Our bodies contain some three to four ounces of it. Our tears, blood and perspiration are salty. The kidneys keep our salt balance, for which reason urine is salty. In fact, the body maintains a very delicate balance between the sodium (in salt) and such other elements as potassium, calcium and magnesium.

The Bible's first reference to salt is to the "Salt Sea," in the days of Abraham. Lot's wife "became a pillar of salt." (Gen. 14:3; 19:26) The law of Moses required certain offerings to be 'seasoned with salt.' (Lev. 2:13) And, in the days of Ezra, salt was among the items officially commanded to be supplied along with wheat, wine and oil.—Ezra 6:9; 7:22.

Salt was so valuable in ancient Rome that it was used as money, soldiers being given part of their salary in salt. This part was called the *salarium*, from which comes the word "salary." Thus a man "not worth his salt" was not worth his wages.

Because of its antiseptic qualities salt is used as a preservative, as in salted herring, in pickles and in sauerkraut. It can also be used as a mouthwash or gargle and in brushing

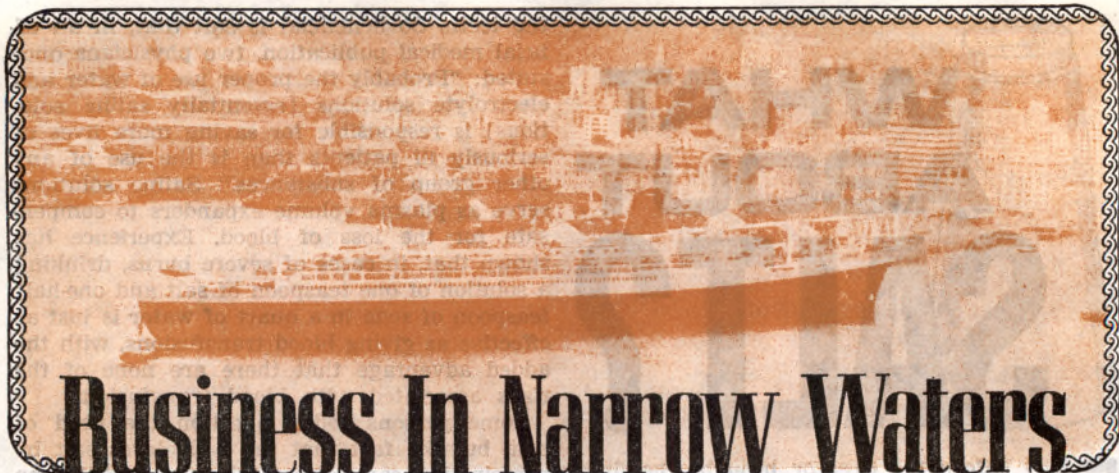
the teeth. So beneficial is salt that, in an official medical publication, two physicians once stated: "Probably the proper use of water and electrolyte solutions [essentially saline solutions] is responsible for saving more lives of seriously ill patients than is the use of any other group of substances." Saline solutions serve as plasma volume expanders to compensate for the loss of blood. Experience has shown that, in cases of severe burns, drinking a solution of one teaspoon of salt and one-half teaspoon of soda in a quart of water is just as effective as giving blood transfusions, with the added advantage that there are none of the risks associated with blood transfusions.

Some persons today question the need of salt, but the fact that the body loses salt by perspiration can indicate that we need some salt. Besides, Jesus said, "Salt, to be sure, is fine." (Luke 14:34) That it is essential for physical well-being seems to be borne out by the salt licks to which grazing animals resort.

But there definitely is a danger of taking in too much salt. Especially should those who eat much meat be very sparing in their use of salt. According to one medical authority, the average person takes in about a half ounce of salt daily, but could get along well on just one fifth of that amount. If the excess salt is not eliminated, the result is dropsy. There has also been shown to be a direct relationship between salt and high blood pressure.

So avoid making the use of salt a habit. At least, taste your food before adding salt. The salt habit not only may tax your kidneys and cause high blood pressure but also will likely cause you to eat too much. When you have parties, it might be a kindness not to serve only salty foods with the drinks. Consider also serving unsalted nuts and such toothsome raw vegetables as carrot sticks and celery stalks. In this way your guests will be avoiding too much salt as well as getting a more balanced repast. And when you do use salt on your food, you may find it beneficial to use a vegetable salt, which can help to cut down on your intake of actual sodium chloride.

There is still another reason for being sparing in your use of salt. The salt habit denies you the pleasure of the many subtle individual flavors that various foods have, especially vegetables. Of course, largely tasteless things, such as the white of an egg, may require a little salt, even as ancient Job noted: "Will tasteless things be eaten without salt?" (Job 6:6) But, remember, when you use salt, use it sparingly.



Business In Narrow Waters

By "Awake!" correspondent in New Zealand

THE hour is early and daylight has not yet crept across the still waters of Auckland Harbor, as a solitary figure walks along the jetty to the waiting launch. As he steps aboard, the launch master says: "The signal station has just reported that she is nine miles outside the fairway buoy. We had better get moving." With a muffled drone of diesel engines, the pilot cutter moves out into the darkness.

With her crew of three, the cutter proceeds down the channels to the vicinity of the fairway buoy at the entrance to the harbor. It is a strongly built vessel, some sixty-five feet in length and capable of exceeding ten knots. "I can see her lights now," says the launch master, and a radio-telephone message confirms that the pilot ladder will be on the port side, which, tonight, is the lee side. (The lee side is opposite to the weather side.)

The night is quiet, with a slight swell, and very soon the dark shadow of a big freighter can be discerned beneath her navigation lights. Soon the cutter comes quietly alongside. The two vessels are still moving at perhaps five to six knots (or, nautical miles per hour) when the pilot steps onto the rope ladder suspended from

the ship's rail and commences a climb that may be anywhere from ten to thirty feet or more. Over his portable radio-telephone he asks the deckhand below to "be sure to send up the mail," which is hoisted up the side by means of a light rope. It is traditional in most ports for the pilot to bring out the mail addressed to the crew.

Not always is the boarding of this harbor pilot carried out under such ideal conditions. In gales, with a big sea running, a high degree of seamanship is called for in choosing the right moment to leap from the heaving deck of the pilot cutter to the ladder.

The third officer and an able seaman help the harbor pilot over the rail and escort him to the bridge. The bridge and wheelhouse are in darkness so as not to impair the vision of those in charge, but a face illuminated by the light of the binnacle (the fitting that houses the compass) is the face of the man at the wheel, the quartermaster, as he is usually called on merchant ships. He is steering a compass course that has been given him by the master of the ship. The pilot now steps over to a silent figure standing against the

windows and looking ahead. He introduces himself to this shadowy figure, the captain or master of the ship, and the pair shake hands.

Handing Over

This captain is Greek and he has brought his ship out to New Zealand via the Cape of Good Hope. He speaks fluent English, so, on this occasion, there is no difficulty in communication. But of the more than two thousand vessels employing pilots in the port of Auckland each year, virtually every maritime nation is represented—Russian, Scandinavian, American, British, Japanese and numerous others.

This ship has encountered heavy weather in the Great Australian Bight after running east across the southern Indian Ocean. The captain advises that some damage has been done to the windlass, the apparatus for lifting and lowering the anchors. "If it is necessary to anchor," the captain tells the pilot, "would you please use the starboard anchor only. Our draft is 32 feet aft and 29 feet forward, approximately. Our engines are single screw diesel . . . a little slow in reversing, but I do not anticipate any undue problems . . . she is usually good steering in this trim. What about Customs formalities and port health officials? I have not been to this port before."

With these exchanges the ship is handed over to the pilot, in this instance a perfect stranger to the captain, and as yet scarcely visible in the darkness of the wheelhouse. Such is the confidence born of tradition and a remarkable accord in international regulations and protocol between nautical men.

"Steady as you go," the pilot says to the man at the wheel, meaning to continue steering the same course. Then, "Full ahead," he says to the third mate, who has remained on the bridge and whose further duty it is to record all engine movements

given by the pilot, in the event of some subsequent casualty.

Conning the Ship

The ship is now entering the channel, and the fairway or sea buoy is close on the port side. "Hard aport," says the pilot to the helmsman. This man responds by simultaneously repeating the order and turning the wheel as far as it will go to the left. He has really actuated a large steering engine connected to the rudder, which engine has turned the ship's rudder to the left. It is only in quite small ships that manually operated apparatus is sufficiently strong to turn the rudder. This ship is 550 feet overall and, at this draft, displaces about 25,000 tons, which, if we remember the principle of Archimedes, equals the weight of the ship and everything in her. Slowly at first, the ship responds to this rudder action. Interestingly, a ship pivots on a point about a third of her length from the bow so that her stern is sweeping over an area that is enclosed by the perimeter of a circle, whose radius, in the case of this vessel, is nearly 380 feet. This fact is not always appreciated by small pleasure-boat owners operating in the vicinity of oceangoing vessels. Such craft should keep well clear of maneuvering ships, particularly when they are turning.

As the direction of our ship changes and comes toward the direction in which we wish to go, the pilot says to ease the wheel to 5 degrees port, then, after a pause, he says, "Amidships." The rudder is now fore and aft with the ship and, although she continues to swing to port, the movement is slowed, and at the further order, "Steady as you go," the helmsman applies compensating rudder to arrest the swing and finally settles her on the new

course. Meantime, we are moving into shallower water and her every response must be watched carefully. There is only four feet of water under her now, as it is low tide. We are in narrow waters as the channel constricts. There are "leading" lights that must be kept in transit and it is not prudent to deviate far from the narrow line indicated.

The lights of an outward-bound ship appear against the background lights of the city, and careful attention to helm orders are required as the two vessels pass less than three hundred feet apart. A collision due to lack of close attention, mechanical defect or sluggish response is ever a risk in such situations. We are doing nearly fifteen knots, and the outward-bounder about the same. She is a tanker, partly discharged, but full of gas, and dangerous. If collision occurred at these combined speeds, the consequences could be disastrous to persons and property. Most of us have seen the results of head-on collisions between motor vehicles weighing only a ton or so. Even if traveling at sixty miles per hour, the combined speeds produce an impact only fractional to that of large ships in contact even at very low speeds. Regrettably, such disasters are not unknown in the seaports of the world. Such a disaster occurred during 1974 in Tokyo Bay, Japan, when a 10,874-ton Liberian freighter collided with a 43,000-ton tanker, setting her on fire. Twenty sailors from the freighter and five from the tanker were killed in that accident.

Our pilot has now completed a variety of orders and has been in radio contact with the signal station. He is informed as to availability of tugs, times of port, officials boarding, berthing times, and so forth. Meantime, he has ordered the engines to be put, first, at "half speed," thence "slow," and, finally, "dead slow," as

we proceed up the inner harbor. It is now breaking day and the ship's captain, who, of course, has been present throughout, is kept informed of developments.

Berthing

Medical and customs clearance have been granted by the respective officials who have boarded by launch. The chief mate proceeds forward, and the second mate aft, to supervise mooring activities and the securing of tugs. The order is now "slow ahead," followed by appropriate helm orders and instructions to the tugs by radio-telephone as the vessel is maneuvered into a suitable position to approach the allotted wharf. The pilot using a strategy that utilizes rudder, engines, tug responses and tidal conditions, based on training and experience, and familiarity with the locality and situation, the potentially tricky operation is soon completed, mooring lines are run ashore and the ship is securely moored. "Make her fast at that," the pilot has said, then, "Ring off the engines," and we have arrived at the destination. A voyage has been completed, and now the ship becomes the concern of the stevedores and others involved with her cargo.

For many years the great Atlantic liners of Great Britain, U.S.A., Italy, Germany and France exceeded in dimensions and power anything else afloat. They were the biggest mobile things ever built by man. These vessels reached a peak in the "Queen Elizabeth" for tonnage, the "United States" for speed and the "France" for length. The "France," for instance, is 1,035 feet long, almost a fifth of a mile. These huge ships were regularly conducted by pilots at the ports on both sides of the Atlantic. But as the Atlantic's "ferry" run declined in importance, some of these vessels found their way into a great variety of other world ports from Rio to Long

Beach, from the Orient to New Zealand. And in doing so they completed their calls without incident under the safe conduct of pilots of numerous nationalities. Although it was not until the nineteenth century that the dimensions of the Ark, at about 450 feet in length, were exceeded, the Atlantic liners have been eclipsed during the past decade by giant oil tankers, some of which carry up to 500,000 tons, and draw in excess of 70 feet when loaded.

Why Pilots Are Necessary

Ships of the maritime nations still find their way across the great oceans and open seas, in the main, by the sextant, the compass, the chronometer and by the position of the sun, the moon and the stars. But navigating seagoing vessels in the restricted waters of ports, channels and canals calls for another area of nautical knowledge—a specialist who knows the local conditions of the port or area in which he is licensed to operate. As a harbor pilot he should be able to maneuver a ship through, to and from places in narrow waters unfamiliar to the shipmaster, and place it at anchorage, buoys or wharves, as required.

Pilots have existed in one form or another in nautical affairs since the earliest times, but state recognition of them appears first to have been by Royal Charters in England incorporating guilds or associations of mariners equipped with appropriate powers and privileges. The old charters laid considerable emphasis on the need to prevent "indiscreet and unskilled persons" from imposing their services on the guileless mariner coming in from the high seas and anxiously searching for a safe anchorage. Evidently at this period there must have been a real need to protect shipmasters from roving would-be pilots and unqualified persons. Their activities were

not without risk to the pilot or "lodesman," as he was sometimes called, for the "black book" of the British Admiralty has it that "if a ship is lost by default of the lodesman, the mariners may, if they please, bring the lodesman to the windlass or other place and cut off his head without the mariners being bound to answer to any judge."

Whereas today there are many international laws governing maritime shipping, yet there is no uniform code of the nations defining legal relations of pilot to master, nor the matter of compulsory pilotage. However, the opinion predominates that the pilot is an adviser to the ship's master and that the latter never relinquishes the command of his ship to another.

Harbor pilots are the first to board incoming ships and the last to leave outgoing ones. They are often the first to learn of tragedy and may bring into port ships damaged or crippled by stress of weather or collision. And there are pilots who have conducted ships to sea that have been lost before reaching their next port.

The pilot plays a vital part in the endless drama of the sea. Every day and night in the ports, channels and rivers of the world great propellers of bronze and of iron churn up foaming wakes through "narrow waters," conducted by these nautical guides whose business it is to contribute to the safety of maritime lives and property.

IN THE NEXT ISSUE

- **Is Abortion the Answer?**
- **Making a Job for Yourself.**
- **Fascinating Planets—for Our Enjoyment.**

WHY THE RISE

IN SUICIDE?

WHY? WHY? WHY?—That is what the young widow had asked herself a thousand times since her husband had hanged himself. He seemed to have so much for which to live—a new baby, a gracious wife, many fine friends, a good job. Everyone knew that he could charm an audience with his musical ability and, though relatively young, he was greatly respected in the community.

There was not the slightest hint that he planned to take his own life. But he did. And now the living, particularly his wife, must bear a tremendous burden, not just the loss of her husband, but also the social stigma often attached to the word—*suicide*.

Perhaps the grief that claws at this young woman has never come upon you. But the subject of suicide still deserves your attention, for it is on the rise. The World Health Organization reports that 1,000 persons commit suicide every day world wide; that is one every 86 seconds. There were almost 25,000 “official” suicides in the U.S. in 1973. Yet these figures only begin to tell the story.

It is estimated that only one American in ten who attempts to take his life is successful; in other words, in 1973 there may have been 250,000 attempts. Suicide figures are low. Because of religious or other feelings, or to preserve life-insurance benefits, “heart attack”—not suicide—is of-

ten shown on death certificates. Evidently many drownings and automobile “accidents” are really suicides.

Where Is the Rise? Why There?

Suicide is nothing new. But in certain groups it is now particularly frequent. Why?

The elderly, for instance, often extremely lonely, are said to be turning more often to suicide. Among black men between the ages of 20 and 35 it is twice as frequent as among whites of the same group. Dr. H. Hendin, author of *Black Suicide*, says that this is due to “the frustration and anger of the black ghetto.” Frustration, too, is blamed for the rise of the problem among professional women. Suicide has reached ‘epidemic proportions’ among youths. Experts blame worry over grades, parents and the opposite sex as the causes.

But are these the real or sole reasons? True, many elderly people are lonely, but that is not entirely new. Multitudes of women are torn between career and home; but only a relatively few kill themselves. Have not youngsters always had school, parent and boy-girl problems? Each of these factors, while contributing something to the current suicide problem, also leaves much unsaid. There must be other factors.

There are. Cities have alienated old people as never before. Contemporary social movements urge women and blacks to “achieve” at any cost or be cast aside. Youths, with little disciplining nowadays,

turn to alcohol and drugs. Additionally, modern movies and television glorify violence and make life appear cheap. The pall of nuclear holocaust dangles over the globe. On every front the world now seems to be in desperate trouble. And, most of all, people feel that there is no one to whom they can turn for aid.

The churches are no longer trusted; they have told the people for too long that the Bible is a book of myths. Most religion is rapidly losing what influence it ever had. It has not been able to build into the lives of individuals the qualities needed to withstand modern pressures.

When personal crises pile on top of one another and are viewed against the backdrop of the larger ones facing the whole human race, many people come to feel hopeless. They have no refuge.

Of course, each individual case is different. Experts do not agree as to what the peculiar blend of circumstances actually is that ultimately moves a person to die at his own hand. Is there some clue that suicide is imminent? Doctors look for a pattern, but it is hard to find. Some people carefully plan to take their own lives, but others act impulsively. Some become erratic before killing themselves, but a sudden calm settles over others.

However, most suicides do *not* have a history of mental disorder. Like the case of the young man mentioned at the start of this article, their death comes as a jolting surprise to everyone.

Coping with Suicide

The bereaved may be particularly upset, reasoning that the person "knew better." True, he probably did; but many "normal" persons have somewhat irrational moments. Says an article in the *National Observer*: "Suicidal crisis is not a

lifetime characteristic. It is often a matter only of minutes or of hours." Unfortunately, when the inclination strikes some people, the opportunity to carry it out is also conveniently at hand.

Family members and friends often feel that they are in some way responsible for what happened. "I should have been more caring, more loving," they may say. Of course, such thinking cannot bring back the dead. Nevertheless, hindsight does impress one thing on all of us: The need to be more attuned to the often-unspoken emotional needs of others.

Of course, in the last analysis, the suicide must accept responsibility for his act before the Giver of life. Even if those observing do not understand the reasons, what the suicide did was *wrong*. Some people have a hard time grasping this fact. Yet Jehovah will stand behind the rightness of His law regarding the sanctity of life.—Ex. 20:13; Rom. 13:9.

But the living may be absolutely confident that He is also merciful and understanding. He alone knows all the complex personal and social factors that can torment an otherwise healthy person into believing he must kill himself. The Bible shows that 'the Judge of all the earth is going to do what is right.'—Gen. 18:25.

The living do well to strengthen themselves not to make the mistake of thinking that suicide is the best way out of life's problems. Develop a real love for God, a respect for life. Learn his Holy Word; it will show you that you can withstand the pressures peculiar to our times. (Matt. 7:24-27) Do not add to the burdens of those left behind by a suicide's act. Make it your determination to help them too to put faith in the One who knows fully the thoughts and intentions of the heart.

Hope Gives One Reasons to Live

THE pressures of living at a fast pace in a highly industrialized society, sickness and discouragement are among the things that have caused many people to lose joy in life. Some feel as did afflicted Job of ancient times: "I would rather be choked outright; I would prefer death to all my sufferings. I am in despair, I would not go on living." (Job 7:15, 16, *New English Bible*) Yet even those who would prefer death can change their whole outlook on life once they come to appreciate the marvelous hope that God sets forth in his Word, the Bible.

● Take the case of a young mother with two children in the state of Ohio. She worked nights and slept during the day. The pressures became just too much for her. In the hope of getting some help, she visited a psychiatrist for about a year and a half.

He prescribed tranquilizers for her. But this brought her no real relief, as she continued contemplating suicide. She would tell the psychiatrist she lost her prescription so that he would give her another one. Then she would get both prescriptions filled. She saved the extra pills, intending to take them all at one time and thus to end her life. Whenever she got depressed, she would count the pills that she had set aside.

But then a big change took place in her life. She agreed to study the Bible with one of Jehovah's witnesses. The hope that the Scriptures contain about God's destroying the present system within this generation and ushering in a righteous new order helped her to look at life differently. In fact, the week she began studying she decided to stop taking tranquilizers, and prayed to Jehovah God for help to do this. Though she had tried to stop taking the pills before, she would always go back to them because of bad withdrawal symptoms. This time, however, she succeeded.

Now she is looking forward, not to dying, but to living a life dedicated to God and helping others to find the hope that gave her reason to live.

● Then there is the experience of a young man afflicted with multiple sclerosis. Half of his body was paralyzed. Confined to a nursing home, he had no real hope and was looking forward to death.

While in the nursing home, he began to study the Bible with one of Jehovah's witnesses. As the study progressed, the young man began attending some meetings at the Kingdom Hall. At one of these meetings, a traveling elder, a circuit overseer, told about a man also afflicted with multiple sclerosis. He pointed out that study of the Bible gave this man a completely new outlook on life, resulting in physical improvement.

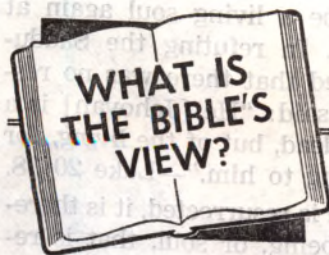
What effect did this have on the multiple sclerosis victim hearing the experience? The Witness who studied with him relates: "When I took him back to the nursing home he was extremely quiet. I took the wheelchair out of the car, put him in it, and took him back to his room. He still didn't say a word. Finally, after some moments in the room, he said, 'That wasn't true.' I questioned him, 'What wasn't true?' He replied, 'The experience about the person with multiple sclerosis,' adding that one so afflicted does not improve."

The Witness encouraged the young man to speak to the traveling elder about it, but he did not want to do that. Nevertheless, the young man continued studying the Bible. In time he, too, began to appreciate that God's promise about a righteous new system was something he wanted to help others to know about. At last he had a hope that he desired to share with others.

Instead of staying in his wheelchair, he tried to walk in his room by holding on to his furniture. He bought himself a walker and had good success in getting around with it. Eventually he became a baptized Witness. Using one finger, he would type from ten to twenty letters a week, sharing what he had learned from the Bible with interested persons and those whom other Witnesses found difficult to contact.

Instead of continuing to live in the nursing home, he arranged to live in his own apartment, to care for it and to cook his own meals. Yes, the hope that God's Word gave him resulted in his looking forward, no longer to death, but to everlasting life in God's righteous new order.

If you are not now studying the Bible with Jehovah's witnesses, why not do so and see for yourself the wholesome effect that God-given hope can have on your life?



What Is the Soul?

even the dead, might be restored to life.—Isa. 53:12.

Accordingly, “soul,” in Biblical usage, as applied to humans, means “life as a human,” or more specifically, “the intelligent creature who is a human.” It involves the whole person, including his body in every part, and his personality, with all its traits and tendencies. Do you find this unusual?

Note, then, what the *New Catholic Encyclopedia* (Vol. 13) says under the heading “Soul (in the Bible)”: “*Nepes* [or, *nephesh*, the Hebrew word for ‘soul’] is used in regard to both animals and humans. If life is human, *nepes* is equivalent to the person, the ‘I.’ After death, the *nepes* goes to Sheol.

“The above summary indicates that there is no dichotomy [division into two parts] of body and soul in the OT [Old Testament]. The Israelite saw things concretely, in their totality, and thus he considered men as persons and not as composites. The term *nepes*, though translated by our word soul, never means soul as distinct from the body or the individual person.”

Then, under the subheading “In the New Testament,” the same work says as to soul: “It [*psyché*, the Greek word for soul] can mean the principle of life, life itself, or the living being.” This reference goes on to say that it was under Greek (not Christian) influence that *psyche*, unlike the equivalent Hebrew word *nephesh*, came to be considered as separate from the body and as immortal. It concludes: “As a living being, subject to various experiences, it [*psyche*] can refer to animals, ‘And every live thing [*psyche*] in the sea died’ (Ap 16.3), or to humans, ‘Fear came upon every soul [*psyche*]’ (Acts 2.43; Rom 2.9; 13.1). Thus the *psyche* feels, loves and desires. In this connection it can be used to mean the personal or reflexive pronoun, as in Jn 10.24, ‘How long dost thou keep us [our *psyches*] in suspense?’”—Pp. 449, 450.

Consequently, we cannot separate the body from the personality, as though the personality were something spiritual or immaterial inside the person, and could exist apart from the body. Biological research has shown that a great portion of our personality is due to inheritance from our father and mother and, through them, from

IN EVERYDAY life you have no doubt heard the expression, ‘There wasn’t a soul in the room.’ You have no trouble in understanding that the speaker means that there was not a human, a person, in the room. You never think that some invisible, disembodied spirit is meant.

Likewise, when the Bible uses the word “soul,” it always uses it with reference to a person, or an animal, something that lives, moves and has a measure of intelligence. The word, when used with regard to humans, is associated with the desires, emotions and experiences of the fleshly human. The Bible says that the soul “needs to eat,” it “sins,” can “pine away,” can ‘struggle for breath.’ (Ex. 12:16; Lev. 4:2; 26:16; Jer. 15:9) “The soul that is sinning—it itself will die,” Ezekiel 18:4, 20 tells us. The human soul is not immortal. But not only are souls that sin able to die. Jesus Christ, who had no sin, “poured out his soul to the very death” as a ransom, so that sinners,

our earlier ancestors. In every one of the billions of cells in an individual's body there are exactly the same chromosomes and genes, the hereditary-carrying factors that make him what he is when he is born. At birth he already has certain leanings and characteristics in his makeup. These will be developed and will become manifest as he grows to adulthood. Even bodily structure, tallness or shortness, heavy or light build, and so forth, influence his personality. Disabilities affect one's traits.

The soul, then, is indeed the entire person, every fiber of his being, along with his characteristics—his entire personality. And the body is such a close-knit structure that we cannot truly say that one part or organ can be affected without affecting all other parts. The apostle Paul used this unity of the human body for illustration. He wrote: "The eye cannot say to the hand: 'I have no need of you'; or, again, the head cannot say to the feet: 'I have no need of you.' But much rather is it the case that the members of the body which seem to be weaker are necessary, and the parts of the body which we think to be less honorable, these we surround with more abundant honor. . . . Nevertheless, God compounded the body, giving honor more abundant to the part which had a lack, so that there should be no division in the body, but that its members should have the same care for one another."—1 Cor. 12:21-25.

In the light of this understanding of what a soul is, we can discern what Jesus meant when he said: "Do not become fearful of those who kill the body but cannot kill the soul; but rather be in fear of him that can destroy both soul and body in Gehenna." (Matt. 10:28) Men can kill the body and put the person out of existence only for a time. They cannot take away the 'title deed' to life as a person. The faithful person is viewed by God as alive,

and is sure to be a living soul again at God's own time. In refuting the Sadducees, who claimed that there was no resurrection, Jesus said: "He [Jehovah] is a God, not of the dead, but of the living, for they are all living to him."—Luke 20:38.

When a person is resurrected, it is therefore the entire being, or soul, that is restored. This does not mean that the identical body made up of the same atoms is brought back. The apostle Paul explains: "God gives it [that which is 'sown' in death] a body just as it has pleased him, and to each of the seeds its own body. . . . If there is a physical body, there is also a spiritual one." (1 Cor. 15:38-44) Those resurrected to heaven would receive a spiritual body, and those brought back to life on earth, a physical body. In resurrecting a human from the dead to life on earth, God can easily reconstruct, with different atoms, the body cells with the same genetic structure and arrangement. He can, in effect, imprint in that body the additional characteristics that the person had acquired during his lifetime. This is as simple for God as for man to register and reproduce picture and sound electronically by means of videotape.

On the other hand, if God destroys the individual in "Gehenna," which is symbolic of everlasting death, not only is the person put out of existence at the time, but he is actually dead forever, because God has destroyed his "soul," his 'title deed' to life.—Matt. 10:28.

Therefore, it behooves the individual who wants life to use his own soul, his entire being and faculties, in serving God. Jesus said about this: "He that is fond of his soul destroys it, but he that hates his soul in this world will safeguard it for everlasting life." (John 12:25) Our concern should be, not merely for the present physical things, but for obedience to God, who can give our souls life everlasting.



Jazz on Vatican Radio

◆ Things have changed at the Vatican's radio station, inaugurated in 1931 by Pope Pius XI. Today one can tune in the program "Studio A" and hear jazz music in stereo. John St. George, the priest who originated this English-language program, reasons: "If you really want to talk to listeners, then you have to meet them where they are. A radio program without an audience is just an exercise in piety." Another innovation is a breakfast-time show in several languages. Aimed at current Holy Year visitors and called "Hello Pilgrim," it features music, news, interviews and information for tourists.

Communist Gains in Italy

◆ Italy's municipal, regional and provincial elections during June resulted in surprising gains for the country's Communist Party. With a membership of 1.7 million, it got 10.1 million votes, compared with 10.7 million for the ruling Christian Democrats. The rest of the votes went to the Socialists and other parties. During Italy's last parliamentary elections, in 1972, the Christian Democrats won 38.8 percent of the votes and the Communists 27.2 percent. This time, the Christian Democrats received 35.3 percent and the Communists 33.4 percent. Thus

the Communist Party won a third of the votes in a traditionally Catholic land.

Effects of Inflation

◆ Recently, Spencer Trask & Co., a United States brokerage firm, composed a list of everyday things and their rate of price rise during the past two years. Note the percentages of increase in just a few cases: Development of a roll of film, 22; laundering a shirt, 25; postage stamp, 25; a dog license, 33; one slice of pizza, 36; a shoeshine, 80; a panhandler or beggar's typical request, 150.

Endangered Rhino

◆ Only an estimated thirty to fifty Sumatran rhinoceroses still survive. Also, it appears that the animal's only hope for continued existence is in northern Sumatra's Gunung Leuser reserve. Why is this an endangered species? For one thing, settlement by man has resulted in the Sumatran rhino's loss of habitat. But the World Wildlife Fund reports that hunters have virtually wiped out the animal to obtain its horn, which, supposedly, is an aphrodisiac.

Home Canning Peril

◆ Rare that it is, the type of food poisoning known as botulism may exist when a person does home canning. Particu-

larly is this so in the canning of low-acid vegetables, fish and meat. High-acid foods, which include most fruits, can safely be prepared for canning in open kettles at high temperatures. But botulism is a danger even when canning tomatoes, usually thought of as a high-acid food. Why? Because their acidity can vary greatly, depending on the variety, the soil in which they were grown and just how ripe they are when canned. According to the United States Department of Agriculture, a pressure cooker should be used when canning low-acid foods. Also, *Redbook Magazine* cautions: "Always prepare and process food exactly according to the method, time and temperature recommended for that specific food by a reliable source of canning information."

Britain's Historic Houses

◆ Inflation is taking its toll of historic homes in Britain. Even for a country house of medium size, yearly maintenance costs have risen from \$6,400 in 1951 to over \$50,000 at present, according to *U.S. News & World Report*. "More owners of historic homes are opening them to the public for a fee," the magazine comments. "Others simply level them. Since 1930, about 1,400 of the buildings the British Government listed as of historical importance have been destroyed. In 1975, there are already applications to tear down another 279 in England alone."

Window Thieves

◆ Deftly, perhaps in less than a minute, and equipped with no more than a heavy screwdriver, a thief can steal a window. But why steal windows? Stained glass, prepared with old materials and in styles of the past, has become very popular. In fact, a single art glass window may sell for hundreds

of dollars. Yet, how common is this form of theft? In Chicago, Illinois, a dealer in architectural antiques remarked: "Fully half the old glass changing hands in this city is stolen." Since stained glass is viewed as art, common homeowners insurance policies do not cover the loss fully unless there are very expensive policy riders that apply to paintings and the like.

Painters Beware

◆ Are you planning to paint your house? If so, the United States Consumer Product Safety Commission has a warning to offer. Guard against skin and tissue damage, if you intend to use an airless paint spray gun. Since such guns eject paint with great velocity and pressure, the skin can be penetrated, with paint going into the tissues underneath. Is that dangerous? Yes, for it can cause permanent injury and the need for amputation may even arise. So, if you buy or rent a spray gun of this type, make sure you comply with instructions for operating it, says the Commission. Also, do not try cleaning the nozzle while the machine is plugged into an electrical outlet; and always stay away from the spray.

Increasing Alcohol Hazard

◆ There has been a sharp rise in the excessive use of alcohol and in alcohol-related deaths during recent years. These are the findings of the committee of the World Health Organization on drug dependence. In a survey of twenty-five lands, excessive drinkers were most numerous in France, Italy, Spain, Luxembourg, West Germany, Portugal, Switzerland and the Soviet Union, in that order. Though the United States and Canada ranked fifteenth and eighteenth, in these countries alcohol was involved in about half the auto-accident deaths, and some 10

to 15 percent of the hospital patients have alcohol-related illnesses. Furthermore, in the United States, problems linked with alcohol account for 26 percent of all admissions to county and state mental hospitals.

Threat to the Taverns

◆ According to the Wisconsin Tavern Keeper Association, taverns of that state are threatened by a competitor. A UPI dispatch from Milwaukee indicated that by June 1, ten Catholic churches already had applied for year-round beer licenses there. These religious applications for licenses to serve beer seemed to be linked with church-sponsored bingo operations.

Convicted Assassin Beheaded

◆ Garbed in a white robe and wearing a blindfold, with his hands bound behind his back, kneeling Prince Faisal ibn Musad Abdel Aziz was executed publicly on June 18 in the Saudi Arabian capital of Riyadh. The twenty-seven-year-old convicted assassin of King Faisal had been declared sane by legal and medical authorities, though the government originally had announced that he was mentally deranged. Thousands watched as capital punishment was inflicted with one stroke of a broad sword. This was the first time the death penalty had been imposed on a member of that country's royal family.

Manatees vs. Lilies

◆ In what is hoped to be a successful experiment, four manatees (two males and two females) have been placed in canals at Xochimilco, Mexico. With its productive truck gardens, this village just south of Mexico City supplies the capital with fruit, vegetables and the like. But a superabundant growth of water lilies has been choking the canals, along which produce is grown.

It has taken crews of 300 men to clear the canal waters daily. Now it is hoped that the herbivorous mammals will accomplish the job alone. It is said that manatees can eat their weight in plants every day. If these four animals dine on the water lilies, each could consume some 550 pounds a day.

Destructive "Culprit"

◆ In 1974, about a 300-foot-long section of Varberg Castle's stone ramparts collapsed and the age of the seventeenth-century Swedish structure was not the prime factor. Rather, a report from Stockholm indicates that a twentieth-century "culprit" is to blame. Geologist Rolf Soderblom has discovered that detergent-laden water from a street drainage system constantly seeped through the clay foundation. Phosphates, chiefly from detergents, brought about a chemical reaction. In time, the clay turned to mud and the ramparts came tumbling down.

Ultrasonic Camera

◆ Heart specialists can now observe a cross section of a beating heart. How? By means of a newly devised ultrasonic motion-picture camera having a resolution reportedly five to ten times better than earlier equipment. This new hand-held probing device, designed by Tony Whittingham of Newcastle General Hospital in Newcastle, England, is capable of picking up twenty frames per second.

Useful Tongues

◆ Besides English, scientists find Russian to be very useful. So indicates the magazine *Changing Times*. Citing the *Occupational Outlook Quarterly* of the United States Department of Labor, the journal points out that next to the English language, Russian is most often used in "sophis-

licated research materials" dealing with the biological sciences, chemistry, geology, mathematics, meteorology and physics.

Mozambique Now Independent

◆ For 470 years Mozambique has been under Portuguese colonial rule. But on June 25 this East African land of nine million inhabitants became independent. This occurred under a government controlled by what is known among Africans as "Frelimo," the National Front for the Liberation of Mozambique. Some concern has been expressed regarding independent Mozambique's relationship with the white minority governments of neighboring South Africa and Rhodesia.

Effects of Sleep Loss

◆ Not long ago, a seventeen-year-old boy went without sleep for eleven days. His 264-hour marathon broke the pre-

vious world's record by four hours. T. R. Van Dellen, M.D., reports that the youngster "went through a brief period of psychosis, but he recovered." What are common effects of prolonged sleep loss? Dr. Van Dellen, writing in the New York *Daily News*, says some individuals "seem to go berserk, others scream in terror, and others sob or mutter incoherently." Among other things, he pointed out that after thirty hours of sleeplessness, the eyes play tricks, and after ninety hours one generally has hallucinations, or hears voices. "The longer a person goes without sleep," remarks Dr. Van Dellen, "the more likely he or she is to commit errors in judgment." Certainly, there is no denying the need for adequate sleep, though individual requirements vary.

Is There Life on Mars?

◆ It has long been suggested that life exists on the planet

Mars, though such thoughts were highly speculative. However, photographs transmitted from the red planet by the Mariner 9 spacecraft in recent years have led some scientists to believe that bacterial organisms could live in the planet's warmer areas, where temperatures range from 130 degrees below zero Fahrenheit during the night to a high of 40 degrees above zero at midday. Moreover, Mars seems to have sufficient water vapor for bacterial existence. The United States plans to launch its Viking spacecraft in August, and then such suppositions may be tested. How? The magazine *Newsweek* explains: "After its 'soft' landing on Mars, Viking will drop food samples onto the soil; any organisms present will presumably eat the food, producing carbon dioxide, whose presence will be detected electronically and sent back to earth." Meanwhile, proof of life there is lacking.

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