Facts and ideas from anywhere

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IT'S ABOUT TIME

The new chief executive officer of the Cleveland Clinic, Dr. Toby Cosgrove, a heart surgeon, has decreed that the fast food joints at the Cleveland Clinic have to go (1). Pizza Hut went quietly. McDonald's, halfway through a 20-year lease, has declined to shut down a franchise that serves 12,000 doctors, nurses, janitors, secretaries, patients, and visitors each week. On its sprawling urban campus,

the clinic also has a Subway sandwich shop, Au Bon Pain, and Starbucks. Of its 13,000 US locations, about 30 McDonald's outlets are in hospitals. McDonald's is fighting back: "If Dr. Cosgrove wants to say McDonald's is inconsistent with the health goals of the hospital, he needs to take a look at the vending machines with candy bars and salty snacks, the cafeteria with deep fried chicken, baked pies and slabs of ribs," said the director of US media relations for McDonald's. McDonald's has also suggested that Dr. Cosgrove is racist for targeting Turan Strange, the African American businessman who owns the franchise. They have raised the specter of unemployment for its 40 low-wage workers and said that closing will hurt the Ohio beef producers. They should never have had McDonald's there in the first place!

THE FRENCH DIET

French-born Mireille Guiliano has written *French Women Don't Get Fat: The Secret of Eating for Pleasure*, which she calls "the ultimate non-diet book" (2). No calories, fat grams, or carbohydrate counts are listed on the recipes or menus. Instead, her advice basically comes down to this: "Eat only good food. Relax and savor every bite." She goes on: "We sit down, take our time, look at the sandwich, admire the bread or the butter on it. We eat slowly. We chew well. We stop between bites."

Only 11% of the French adult population is obese compared with about 30% of adults in the USA. An estimated 21% of French women and 33% of French men smoke compared with 20% of US women and 25% of US men. Thus, smoking does not account for the weight difference.

Much has been written about how the French drink lots of wine and eat baguettes and high-fat foods such as creamy sauces, red meat, butter, and cheese and still stay slim and have less heart disease. The French, however, eat real food, not faux food like chips, sodas, and artificially flavored snack foods. The French eat a wide variety of fresh foods including plenty of fruits and vegetables, but not a lot at one sitting. They value quality

over quantity. Guiliano believes that Americans have a different relationship with food that too often excludes pleasure and makes them eat more. Americans eat 10% to 30% more than they need, she says.

Guiliano has apartments in both New York and Paris and has seen how women eat on both sides of the Atlantic Ocean. She emphasizes that French women "eat as they like and they don't get fat. French women don't obsess about weight, constantly talking about their diets, skip meals, substitute slimming shakes for meals, snack frequently, eat while standing or on the run, gobble fast food or weigh themselves constantly. The French women consume 3 good meals a day, watch portions, eat lots of fruits and vegetables, use seasonings, eat a variety of seasonal foods, drink plenty of water, savor wine, walk everywhere including up and down the stairs, indulge in a treat every once in a while." She is 63 inches tall and weighs 110 pounds. She eats 3 meals a day and drinks champagne or wine daily. Her business requires her to eat in a restaurant about 300 times a year and when she does, she eats full meals, with sparkling water.

THE POLYMEAL

In 2003, Wald and Law (3) introduced the concept of the polypill. They selected 6 drugs that by modifying different risk factors of cardiovascular disease might reduce the levels of cardiovascular disease in the population by >80%. Franco and colleagues (4) from the Netherlands, Belgium, and Australia described a safer, nonpharmacological, and tastier alternative to the polypill, namely the polym meal. They calculated the potential effects of the polym meal in terms of total life expectancy and life expectancy with or without cardiovascular disease. They garnered from publications the effects of various ingredients of the polym meal in reducing the risk of cardiovascular disease. The percentage reduction in cardiovascular disease by the various ingredients was as follows: wine (150 mL/day), 32% reduction; fish (115 g 4 times/week), 14%; dark chocolate (100 g/day), 21%; fruit and vegetables (400 g/day), 21%; garlic (2.7 g/day), 25%; almonds (68 g/day), 12%; and combined effects of all the ingredients on reduction of risk of cardiovascular disease, 76%. For men and women, the polypill would increase total life expectancy by 7 years beginning at age 50 and increase life expectancy free from cardiovascular disease by 9 years. Thus, the polym meal could be an effective, natural, probably safer, and tastier alternative to the polypill to reduce cardiovascular disease and increase life expectancy.

ARAB OBESITY

In some Arab countries, thin women are believed to be unhealthy and rotund women more desirable as wives (5). This

philosophy helps explain why much of the Arab world, which stretches from the Persian Gulf in the east to Mauritania in North Africa, is experiencing an explosion of obesity. About half of the women in the Middle East are overweight or obese, according to the United Nations' World Health Organization. In some communities, many of which were nomadic until a few decades ago, oil wealth has dramatically improved the living standards. The resulting urbanization has introduced some western habits: high consumption of sugar, fat, and processed foods and more sedentary lifestyles. In Bahrain, 83% of women are obese or overweight according to the International Obesity Task Force, a London-based think tank that tries to persuade countries to tackle the problem. In the United Arab Emirates, the figure is 74%; in Lebanon it is 75%. By comparison, about 62% of American women are overweight or obese. The prevalence of childhood obesity in the Middle East has risen rapidly in recent years, and diabetes mellitus is spreading across the region according to the World Health Organization. Even predominantly Arab North African countries without oil wells are wrestling with the challenge, in part because of a traditional preference for larger women. Half of all women in Tunisia and Morocco are overweight or obese.

After years of not acknowledging the health problems associated with obesity, Arab governments are now growing concerned about its financial impact. Obesity and associated illnesses, such as diabetes mellitus, account for an increasingly large share of the Middle East's total health costs.

Mauritania is the only nation today where force-feeding of girls is systematically practiced, mostly in rural areas. A predominantly Arab nation of 3 million people, Mauritania borders Algeria, Mali, Senegal, and Western Sahara and is roughly the size of France, from which it won independence in 1960. Today, the country is a closed society ruled by an authoritarian Islamic government. Force-feeding in Mauritania originated decades ago when many prosperous families kept slaves. Men stayed lean through working while women led more sedentary lifestyles. Faced with life in a harsh desert landscape, men typically sang songs not about the beauty of nature, but the attractiveness of large women. In a land that suffers from a constant shortage of food, plump women are still assumed to be both wealthy and more likely to bear healthy children (a myth).

Force-feeding (gavage), which comes from the process used to force-feed geese to make foie gras, is usually done by the girls' mothers or grandmothers. The girls' bellies are sometimes vigorously massaged to loosen their skin and make it easier to consume even greater quantities of food. The practice of gavage has survived even though, since the 1970s, Mauritania has suffered prolonged droughts that have led to food shortages. It is estimated that just over 20% of Mauritanian women were force-fed as young girls. Half of those girls became overweight or obese as adults, and many now have diabetes, heart disease, and gastric ailments. Local officials say that some women are so fat that they can hardly move. In a survey of 7000 Mauritanian adults, 15% of the women said their skin split as a result of overeating. One fifth of women said their toes or fingers were broken to make them eat. One third said that they regretted that they had been subjected to overeating. Most cited the difficulty of walking and the pain they endured while being force-fed. Efforts by women's groups and the government to stamp out force-feeding have largely been ignored.

VITAMIN E SUPPLEMENTS AND MORTALITY

At one time, I took vitamin E supplements, believing that they decreased the frequency of coronary heart disease. Probably many others took these supplements as well. Numerous studies now have concluded that vitamin E supplements do not decrease the frequency of coronary heart disease and, indeed, may actually be harmful. A recent metaanalysis (6) testing vitamin E ≥ 400 IU/day showed increased risk for all-cause mortality compared with a control group. Thus, high-dose vitamin E supplements should be avoided.

FOLATE INTAKE AND HYPERTENSION

Forman and colleagues (7) from Boston, Massachusetts, studied over 50,000 women from the Nurses' Health Study who did not have hypertension at baseline and followed them over 10 years. Of the 93,803 women aged 27 to 44 at baseline, 7373 developed hypertension, and of the 62,260 women aged 43 to 70 years at baseline, 12,347 developed hypertension (blood pressure $>140/90$ mm Hg). Assessment of folate intake disclosed that the younger women who consumed at least 1000 $\mu\text{g/day}$ of total folate (dietary plus supplemental) had nearly a 50% decreased risk of developing hypertension compared with those who consumed <200 $\mu\text{g/day}$. Thus, increasing folate intake might be good for our blood pressure.

CNN'S TOP 25 MEDICAL STORIES IN THE LAST 25 YEARS

In 2005, CNN is celebrating its 25th anniversary. As a consequence, a number of shows will discuss the top 25 stories in the last 25 years on various topics. One that has already appeared is the 25 top medical stories of the past quarter-century (8). These include the following:

1) *Human genome mapping*. Francis Collins and Craig Venter independently discovered the sequence of the human genome. Already, gene-based designer drugs have been developed, including Gleevec, which fights a form of leukemia. Collins stated: "By 2015, we will see the beginnings of a real transformation in the therapeutics of medicine, which by 2020 will have touched virtually every disorder. And the drugs that we give in 2020 will for the most part be those that were based on the understanding of the genome." The human genome was mapped years ahead of schedule. In 10 years, each individual's genome might be sequenced at a cost of \$1000/person.

2) *Stem cells*. Embryonic stem cells can potentially be manipulated to become any type of cell, and they appear to be useful in the treatment of diabetes mellitus, Parkinson's disease, and spinal cord injuries. The embryonic stem cells come from embryos, which usually come from fertility clinics, and this has caused considerable controversy. Adult stem cells come from bone marrow and umbilical cord, and their benefit appears limited. California recently passed a bill to spend \$3 billion for embryonic stem cell research.

3) *Cloning*. Dolly was born in July 1996 and was put down in February 2003. Obviously, cloning is just at the beginning of its run.

4) *AIDS*. AIDS first appeared in 1981 in gay men and has been a global pandemic since then, the worst in history. Each day, 14,000 people become HIV positive around the world. The protease inhibitors were introduced in 1996 and, although these

drugs are not curative, they can help keep the disease in check. So far, about 60 million people have been infected with HIV, and none have been cured. Although a vaccine may be developed in the future, there is not one as yet. The newer drugs cost the HIV patients about \$10,000 a year.

5) *Living-donor liver transplant*. The first living-donor liver transplant was performed in 1989.

6) *Self-contained artificial heart*. An artificial heart was implanted in 2001, and the first patient lived 151 days.

7) *Prozac*. This drug appeared in 1986 and became the most common antidepressant worldwide. At least 40 million have used it.

8) *Seatbelt laws*. The first US seatbelt law appeared in New York in 1984, and other states followed thereafter. There is no question that seatbelts have saved numerous lives and prevented numerous injuries.

9) *Obesity*. Of the 6.2 billion people on earth, 1 billion are obese, and the largest percentage in any country is in the USA, where over 30 million obese persons live. The man who ate all meals for 1 month at McDonald's gained 25 pounds that month, nearly 1 pound per day. In recent years, obesity in adolescents has tripled.

10) *Body mass index*. The ideal body mass index (BMI) is <25 , overweight without obesity is 25 to 30, and obesity is $>30 \text{ kg/m}^2$. The BMI is a way to connect weight to height, and its number provides the risk of developing diabetes mellitus, osteoarthritis, some cancers, and atherosclerotic disease. In the USA, 60% of the adult population has a BMI >25 , and 30% has a BMI >30 .

11) *Phen-fen*. Because of the side effects seen with this combination of appetite suppressants, one of the drugs was removed from the market and numerous lawsuits were filed against Wyeth-Ayerst Pharmaceuticals.

12) *Low-carbohydrate diet*. These fad diets are beginning to lose their impact.

13) *Cosmetic surgery boom*. Tummy tucks, liposuction, and breast augmentation have never been more popular. Cosmetic surgery started out as a phenomenon of older, well-to-do, largely white people, and it's spreading to everybody. Approximately 23 million Americans have had it. More plastic surgery occurs in the USA than in any other country; Mexico is number 2, and Brazil is number 3. There are now 1 million cosmetic surgery clinics in China. Apparently, there is a great need to change the way we look and feel.

14) *Gene therapy*. Researchers are just beginning to insert healthy genes into unhealthy cells.

15) *Anthrax attack*. In 2002, anthrax powder was sent through the mail, targeting members of congress and media outlets and killing 5 people. Antibiotics taken within 6 days of exposure may be curative, and a vaccine is now in production. No one has been apprehended for this act of bioterrorism.

16) *West Nile/severe acute respiratory syndrome*. The mosquito-spread West Nile virus and severe acute respiratory syndrome (SARS) are quite different. From 1999 to 2001, 149 cases of West Nile virus were reported in the USA, with 18 deaths. During the 2003 outbreak, SARS affected over 8000 people, mostly in Asia, and killed 774.

17) *Prescription drug advertising*. Direct consumer marketing of prescription drugs started in 1997. It has increased the consumption of drugs in the USA.

18) *Tobacco settlement*. After years of winning all lawsuits against it, the tobacco industry finally settled with 46 states for \$246 billion. Although smoking is dangerous and addictive, tobacco is still not considered a drug. Only 5% of the \$246 billion has gone to smoking prevention efforts. Smoking is now known to cause disease in nearly every organ of the body. About 2000 new teenagers start smoking each day. Those who do not take up smoking as teenagers rarely do so after age 20.

19) *Silicone breast implant settlement*. The leaking silicone implants have now been replaced with saline. More than 440,000 women sued Dow Corning Corporation, the maker of silicone breast implants, claiming that the implants caused health problems. In 1999, Dow Corning agreed to a multibillion dollar settlement, even though it has never been proven that silicone rubber is damaging.

20) *Reproductive surgery*. Assisted reproduction technology really got under way in 1981 and has been flourishing since.

21) *Laser eye surgery*. Laser eye surgery helps patients with cataracts and may correct severe nearsightedness entirely; it may also make glasses and contact lenses obsolete.

22) *Mad cow disease*. Three million cows were slaughtered in the United Kingdom because of the possibility of bovine spongiform encephalitis (BSE). The human form of BSE, namely variant Creutzfeldt-Jakob disease, has claimed 160 lives. The disease may lie dormant for up to 25 years. The only cow in the USA with BSE came from Canada.

23) *Ritalin for attention deficit hyperactivity disorder*.

24) *Tylenol tampering*. The case of cyanide-laced Tylenol occurred in 1982 and still remains unsolved. When 7 people died after ingesting the tampered capsules, Johnson & Johnson immediately recalled 31 million bottles of the product. Caplets and tamper-proof caps were then introduced.

25) *Viagra*. This drug for erectile dysfunction was introduced in 1988, and now Medicare pays for it.

CADAVERS AS TEACHERS IN THE MEDICAL SCHOOL DISSECTING ROOM IN THAILAND

I enjoyed the anatomy class in my medical school (Emory). A body was available to each of 4 students, and in my group of 4 I was the only one who enjoyed the dissecting. As a consequence, I ended up doing nearly all of it for our group. Who the person was that I dissected, I had no earthly idea, and, I'm embarrassed to say, I thought little about it at the time or subsequently.

A recent piece (9) described the relation between the medical students and the bodies they dissect in Thailand. A little background: Thailand remained an independent kingdom throughout the colonial period, and western medicine was introduced in the middle of the 19th century, mainly by American missionaries. Use of anatomic dissection for teaching was introduced around 1900. Today, anatomy is taught in a dissection course for second-year medical students, and the dissection techniques and students' proficiency levels apparently are no different from western standards.

Cadavers are acquired in Thailand through unremunerated donations. Like most western countries, Thailand used to use

unclaimed bodies for anatomic dissection, which resulted in a shortage of cadavers until about 30 years ago. Today, there is no longer any shortage of willing donors even though most Thais are Buddhist and remain reluctant to donate organs for transplantation because of their belief in rebirth.

At least 2 factors have helped Thai people overcome their reservations: 1) the king has officially approved body donation, a strong incentive in Thai society, and 2) donors attain the highly regarded status of “great teacher” (*ajarn yai*). Teachers in Thailand are respected to an extent unfamiliar to westerners. This respect is formalized in a ceremony called “honor the teacher,” which takes place annually in Thai medical schools. The custom of calling the donors “great teachers” can be traced back to the very first Thai body donor, a professor of literature, who was inspired to donate his body in the 1930s by the idea of remaining a teacher after death.

The status of “great teacher” is conferred by 2 ceremonies: the dedication ceremony some days before the first class and the cremation ceremony at the end of the course. These ceremonies are important events in faculty life and are attended by the highest officials and students from earlier years.

In the dedication ceremony, faculty members, students, relatives of the deceased, and Buddhist monks come together in the dissecting room to pray and chant. The donors (the cadavers) are present and are offered ritual flower bouquets. The donors' names are read aloud, and they are conferred the title of “teacher.” The monks are given a meal and gifts as a symbolic way of giving to the deceased. A major symbolic theme of these ceremonies is to “make merit” for the spirits of the deceased, i.e., transferring merit helps the spirit or soul go to heaven and increases its chances for a better rebirth. The initial ceremony focuses on establishing a relationship between the student and his or her cadaver, one that they have learned from early childhood: respect for a highly valued teacher.

The cremation of the dissected bodies occasions an even bigger ceremony. It culminates in a large procession led by the monks in which the students carry their dissected body to the cremation building. Booklets are distributed that include the donors' pictures, their addresses, a short curriculum vitae, and words of condolence and gratitude from the faculty and students.

During the course, the cadavers are always referred to as *ajarn yai*, never as *sop* (cadaver). Respect for these teachers is paramount. Some students apparently respect them even more than the living teachers. Some cadavers are greeted with a *wai*, the Thai greeting bow. Some students bring them flowers, and many intend to pray for their *ajarn yai* at the temple. The name, age, and cause of death of the donor are usually indicated on each dissecting table. Students readily reproduce the name when asked to do so, and many doctors still remember the name of their *ajarn yai* from their student days.

Even dissection of a deceased acquaintance or relative does not seem to be something beyond imagination for the Thais as it is in the West. It is not uncommon in Thai anatomy departments to have the remains of former staff members, often still well remembered, on display and showcased together with a picture and flowers.

Donor anonymity is obviously not an issue in Thailand as it usually is in the West. The students see the cadaver as their

teacher and thus attribute a social role and status to it. In the West now there apparently is a push in some centers to regard the cadaver as the students' “first patient,” which might encourage respectful treatment. It could be argued, however, that students who treat cadavers like patients might later treat their patients like cadavers, which obviously could have a negative effect. Treating the cadaver as a teacher, as the Thais do, avoids this problem, as the cadaver is closer to a respected nonmedical person than to a medical object.

SPIRITUALITY AND GENES

Does our DNA predispose us toward religious faith? The notion of a genetic inclination toward religion is not new (10). Edward Wilson, the founder of the field of sociobiology, argued in the 1970s that a predisposition to religion may have had evolutionary advantages. Similar evidence is explored in a fascinating book published recently by Dean Hamer, a prominent American geneticist, entitled *The God Gene*. Although much of Dr. Hamer's work is speculative and has not been replicated, openness to spirituality may have a genetic predisposition. One bit of evidence supporting a genetic basis for spirituality is that twins separated at birth tend to have similar levels of spirituality, despite their different upbringings. And identical twins, who have the same DNA, are about twice as likely to share similar levels of spirituality as fraternal twins.

Nature even tends to favor genes that promote an inclination to faith. Many recent studies suggest that religious people live longer than the less religious. A study of nearly 4000 people in North Carolina, for example, found that frequent churchgoers had a 46% lower risk of dying in a 6-year period than those who attended less often. Another study involving nearly 126,000 participants suggested that a 20-year-old churchgoer might live 7 years longer than a similar person who did not attend religious services. Partly, that's because the religious seem to adopt healthier lifestyles—they are less likely to smoke, for example. And faith may give people strength to overcome illness. Another possibility involves brain chemistry. Genes that promote spirituality may do so in part by stimulating chemical messengers in the brain like dopamine, which can make people optimistic and social and perhaps more likely to have children. Evolutionary biologists also have suggested that an inclination to spirituality may have made ancient humans more willing to follow witch doctors or other leaders who claim divine support. The result would have been more cohesive bands of cavemen better able to survive and to kill off rival cavemen.

Of course, none of this answers the question whether God exists. But, what the research does suggest is that postindustrial society will not easily leave religion behind. Faith may be quiescent in many circles these days or directed toward meditation or yoga, but it is not something that humans can easily cast off. As Nicholas D. Kristof concludes, a propensity to faith in some form appears to be imbedded within us as a profound part of human existence, as inextricable as the way we love and laugh.

DIRECT-TO-CONSUMER ADVERTISING

The challenge for governments evaluating direct advertising of prescription-only drugs to the consumer is how to achieve maximum benefits for health and wealth while minimizing harm

(11). In the last 4 years, New Zealand, Australia, Canada, and the European Parliament either banned or rejected proposals for direct-to-consumer advertising. The USA is the only industrialized country allowing full direct-to-consumer advertising of prescription drugs.

Direct-to-consumer advertising increases the use of drugs and medical services and increases wealth for the pharmaceutical, advertising, and media companies. It increases expenditures by patients, taxpayers, insurers, and large employers. Direct-to-consumer advertising is most profitable for the most expensive new drugs. This type of advertising stimulates rapid adoption of new drugs, which may or may not have advantages over less-expensive alternatives. Proponents of direct-to-consumer advertising claim that it increases public knowledge. The purpose of such advertising, however, is to persuade rather than to inform. Direct-to-consumer advertising leaves many people with exaggerated perceptions of the benefits of drugs. Demand stimulated by such advertising creates dilemmas for physicians who aspire to be both patient-centered and evidence-based. As a consequence, many health professionals and their representative organizations strongly oppose advertising directly to consumers. I, for one, am against it.

ABSENTEEISM VS PRESENTEEISM

Ellen Goodman, one of my favorite columnists, recently had a piece entitled “Sickness can cost jobs” (12). She discussed “presenteeism,” the opposite of absenteeism, namely the practice of coming to work when you should be in bed. Presenteeism inflicts workers who fear being considered slackers, have a contagious work ethic, or need the money that doesn’t come when absent.

Today, 47% of private employees in the USA get no paid sick leave. That includes 76% of low-wage workers. In addition, 86 million US workers do not have a single paid sick day that can be used to care for a child or a parent. The last comprehensive piece of legislation dealing with work and family and health was the Family and Medical Leave Act (FMLA) in 1993, and it guaranteed 12 weeks of unpaid leave for the serious illness of a family member or the employee. This piece of legislation has been used by >50 million Americans, 40% of them men. But FMLA covers the 60% of workers in companies with ≥50 employees. Three quarters of the people who need leave but don’t take it say it’s because they can’t afford to lose a paycheck. One in 10 who take leave end up on public assistance.

The National Partnership for Women and Families is now pushing a bill to get 7 days of paid sick leave in companies with ≥15 employees. These days can be used for the sickness of the employee or his or her family member. Hardly anyone expects this bill to pass in congress. Momentum, however, is building in the states, where 21 such bills were introduced last year. California became the first state to have partially paid leave. There seems to be more presenteeism at work and absenteeism at home.

EFFECT OF DEMOCRACY ON HEALTH

Franco and colleagues (13) from Alicante, Spain, analyzed 98% of the world’s population in 170 countries. Overall, 45% of the countries were free; 32%, partially free; and 24%, not free. Just over 60% of the world’s inhabitants are therefore exposed to lack of freedom by living in partially free countries (29%) or in

countries that are not free (32%). The political rights analyzed to determine how free the countries were included elected rule, competitive parties or political groupings, opposition with actual power, and self-government of minority groups or their participation in the government. The civil liberties analyzed were freedom of expression, assembly, association, education, and religion; system of rule of laws; free economic activity; and equality of opportunity. The researchers obtained data on life expectancy, infant mortality, and maternal mortality in most countries and reported the results: “The health indicators showed a statistically significant relation with freedom ratings: the highest levels of health were in free countries followed by the partially free countries, and the worst levels of health were in countries that were not free. Democracy showed a stronger and more significant association with indicators of health (life expectancy, infant and maternal mortality) than indicators such as gross national product, total government expenditure, or inequality in income.” Thus, democracy has a positive independent association with health.

MALARIA AND OTHER AFFLICTIONS

An estimated 230,000 people died as a consequence of the December 26, 2004, tsunami. In contrast, nearly every month an estimated 165,000 people die of malaria, 240,000 die of AIDS, and about 140,000 die of diarrhea (14). Probably 2 million to 3 million people die annually of malaria, most of them children and most in Africa. According to Nicholas Kristof, Americans give 15¢ per day per person in official development assistance to poor countries. The average American spends 4 times that on soft drinks daily. Denmark, Belgium, France, and Greece all give much more. To save money, African children are given medicines for malaria that cost 5¢ a dose but aren’t very effective; the medicine that would actually save their lives is unaffordable at \$1 a dose. It is estimated that spending \$2 billion to \$3 billion on malaria might save >1 million lives a year.

NATURAL DISASTERS

Some of the world’s largest cities, and hundreds of others, sit on faults and flood plains (15). Whole regions—the Indonesian archipelago, Central America—are dotted with active volcanoes, their slopes crowded with farms and towns. Some cities at most risk include Mexico City, 18 million; Guatemala City, 1 million; Lima, 7.5 million; Algiers, 1.5 million; Istanbul, 8.8 million; Tehran, 6.8 million; Karachi, 9.3 million; Delhi, 9.8 million; and Manila, 9.9 million. During the 20th century, just over 20 million people were killed from drought, nearly 7 million from floods, nearly 2 million from wind storms, nearly 2 million from earthquakes, nearly 100,000 from volcanoes, and just over 50,000 from landslides. These tolls make the unnatural disaster of September 11, 2001, in the USA seem relatively small.

ANIMALS IN TSUNAMIS

For centuries it has been recognized that many nonhuman animals have a sixth sense in detecting hurricanes, earthquakes, tsunamis, and volcanic eruptions long before the earth starts shaking (16). Rats race from buildings, sparrows take flight in flocks, dogs howl incessantly. One Danish man who experienced the recent Indian Ocean tsunami wrote, “Dogs are smarter than any of us. They started running away up to the hilltops long before we

even realized what was coming.” At a hard-hit park in Sri Lanka, stunned wildlife officials reported that hundreds of elephants, leopards, tigers, wild boar, deer, water buffalos, monkeys, and smaller mammals and reptiles had escaped unscathed.

Animals’ physiology—supersensitive to sound, temperature, touch, vibration, electrostatic and chemical activity, and magnetic fields—gives them a head start in the days and hours before natural calamities. It’s a sensitivity that humans don’t have. But animals, through millions of years of evolution, have developed it, and that’s how they have been able to survive as a species. It is run or perish. Some animals such as elephants are extremely sensitive to ground vibrations. The elephants most likely felt the quake in their feet and trunks. Elephants are known to lay their trunks on the ground when an airplane or truck generates large seismic noise. With the elephants’ intelligence—their brain is the largest of terrestrial creatures—they can figure out what direction the stimulus is coming from, how strong it is, and what evasive action to take. Some animals may have heard the tsunami coming from the moment the quake erupted under the ocean. Species of birds, dogs, elephants, tigers, and other animals can detect “infrasound” frequencies in the range of 1 to 3 hertz, compared with humans’ 100-to-200 hertz range. Canines’ sense of smell is 10,000 to 100,000 times superior to that of humans.

SURVIVING PLANE CRASHES

Most people walk away from even the most fiery crashes (17). From 1983 to 2000, the National Transportation Safety Board investigated 26 major commercial accidents involving 2739 people, of whom 1525, or 56%, survived. Certain changes make plane crashes more survivable: the floor lighting helps passengers find the exits when a cabin fills with smoke; stronger seats are designed to stay bolted down against crash forces; and now researchers are looking for fire-blocking materials that could be used to insulate airplanes, giving passengers additional seconds to escape rapidly advancing jet-fuel fires. Planes could be safer if passengers faced backward rather than forward.

Here are some other tips for travelers according to David Palmerton, the Federal Aviation Administration’s expert on protection and survival:

1. Count how many rows there are between you and the emergency exits, both in front of you and behind you. The counting helps in case smoke or darkness makes it tough to see clearly.
2. Use the “crash position” and brace for impact. The best position is to get your head between your knees, but an alternative is to put your head in your hands and lean against the seat in front.
3. Leave your luggage.
4. Stay low and breathe slowly. Breathing the smoke of an aircraft fire hurts.
5. Get through the exits quickly, but one at a time.
6. Don’t worry about taking your shoes off because the plastic now used in evacuation slides can resist rips.
7. Help at the bottom of a slide.

The biggest threat in a survival crash is fire. Jet fuel (essentially kerosene) burns very hot, at 1500°F, hotter than the melting point of aluminum. In addition, materials used in manufacturing airplanes give off toxic smoke, so the fuselage can become

a deadly gas chamber in as little as 90 seconds. Just as quickly, heat can become so intense that a “flashover” occurs, where the entire cabin explodes in instantaneous combustion. The most important tip is to get out quickly. To be certified, a commercial airliner has to have enough exits to get a full load of passengers out within 90 seconds using only half of the doors.

THE LAST BOEING 737-200

On January 17, 2005, Southwest Airlines retired the last of its Boeing 737-200 models (18). The company has now replaced all of its older 737s with Boeing models 300, 500, and 700, all of which are quieter and more fuel-efficient than the workhorse 737-200. During its 21 years at Southwest, the last 200 model flew enough miles to circle the earth 1559 times (about 39 million miles); had 24 engine changes; had 200,000 hours of maintenance work done; was completely taken apart down to its frame and rebuilt twice; burned 87 million gallons of fuel; used 1789 tires; carried 3.6 million pieces of luggage; flew as many passengers as the populations of Los Angeles and Phoenix combined; and served passengers an estimated 38,000 gallons of beer and 5 million bags of peanuts. My cars don’t last like that, and they go a lot slower.

AIR FORCE ONE

Strictly speaking, “Air Force One” is a call sign given any military plane carrying the president of the USA (19). Most often, it’s one of 2 customized Boeing 747-200Bs put into service nearly 15 years ago. On a typical overseas trip, one of the jumbo jets carries the president and his party, and the other is filled with more support staff and flies as a backup. On board is an office, a conference room, and a fully equipped medical clinic with a pop-out operating table. There is a crew of 26 and seats for 76 passengers, including the president’s traveling contingent of aides, advisors, doctors, and communications and security personnel, as well as a rotating pool of about a dozen reporters and photographers. Satellite television and Internet access are now airborne staples along with state-of-the-art antimissile protection. There is a presidential state room and shower, a treadmill, and an elliptical trainer or a stationary bike. Since President Bush took office in January 2001, he has touched down in >40 countries, several of them more than once. In addition to the Secret Service agents traveling with the president on Air Force One, hundreds of others will have gone ahead with several transport jets loaded with armored limousines and communications and security equipment.

IWO JIMA

February 2005 represents the 50th anniversary of the fiercest battle of World War II (20). Iwo Jima was an 8-square-mile Japanese fortress consisting of 800 pillboxes and >3 miles of tunnels. Capturing Mount Suribachi was the Marines’ first objective as well as capturing 3 air strips that were crucial for continued US B-29 raids on mainland Japan. Mount Suribachi was a hollow, 7-story fortress complete with walls, sewer systems, electricity, water, and about 1300 enemy Japanese soldiers. Japan had 21,200 troops on the island; during the battle with 70,000 US troops, nearly 20,200 Japanese soldiers were killed. The USA lost nearly 6000 soldiers, and another 22,000 were injured. The battle on Iwo Jima was the bloodiest ever for the Marine Corps. The most famous

picture of World War II, the raising of the US flag on the summit of Iwo Jima's Mount Suribachi on February 23, 1945, was taken by Sergeant Bill Genaust, who was killed 9 days later (21).

SUBMARINE POWER

The USS *Jimmy Carter* joined the nation's submarine fleet on February 19, 2005 (22). It is 453 feet long, has a crew of 133 men, has a speed of 40.25 miles per hour, and carries up to 100 mines and 50 Harpoon missiles, Tomahawk missiles, or torpedoes. These weapons have the destructive power of about 23,000 times the atomic bomb that went off in Hiroshima! Thus, one submarine could virtually destroy the world. Additionally, it has the ability to tap undersea fiber-optic cables, which may be very helpful in intelligence gathering. The cost, \$3.2 billion. It is the last of the Sea Wolf class of attack submarines. We have already spent \$300 billion in Iraq and Afghanistan, so \$3 billion for the capability to destroy planet earth, I guess, is not so bad.

TOP 10 RETIREMENT SPOTS

Warren Bland, a geography professor at California State University at North Ridge and author of *Retire in Style*, says too many retirees move to towns where their adult children live or to their favorite resort towns (23). He says that both choices may be mistakes. Bland indicates that adult children relocate as many as 5 times during their careers with their children in tow, and that quaint, relaxing resort towns have a way of increasing in congestion, public facilities, cost of living, and taxes. Bland recommends considering such factors as quality of life, cost of living, climate, and landscape. His 10 top cities to retire in are 1) Boulder, Colorado; 2) Portland, Oregon; 3) San Antonio, Texas; 4) Austin, Texas; Asheville, North Carolina; Boca Raton, Florida (tie); 5) Chapel Hill, North Carolina; 6) Colorado Springs, Colorado; 7) Madison, Wisconsin; and 8) Pittsburgh, Pennsylvania.

JAMES CASH PENNEY

When I was young my mother gave me the sayings of J. C. Penney, and I read them often. He died in 1971 at age 95 and during his life compiled many quotable quotes such as the following (24):

"It is a natural thing to want to succeed, but all are not willing to pay the price of success. Some folks have a wishbone instead of a backbone."

"As a rule, we find what we look for; we achieve what we get ready for."

"Opportunity never goes; it stays; it is with us continually. It keeps hammering away like the tapping of a machine gun; it is so close to most of us that we fail to realize and appreciate it."

"Let us think more of the opportunity before us than we do of the accomplishments behind us."

"A merchant who approaches business with the idea of serving the public well has nothing to fear from the competition."

"A man is successful in proportion to the extent to which he encourages men to develop themselves. It really takes a big man to believe in other men, to entrust one's affairs to them, and, having done so, to discharge anxiety from the mind."

SPEAKING ENGLISH

Never mind that US citizens probably have the least effective language skills, certainly in the developed world; it's all right because the rest of the world is focusing on English. A commission in France has recommended that the teaching of English be mandatory in all French schools and that it be accorded the same importance as the French language and mathematics (25). The commission has taken the position that English is now the "language of international communication" and that young French people must be taught to speak and write it fluently, despite Jacques Chirac's hatred of the spread of English. The Germans, the principal allies of the French in the European community, have allowed English to replace French as their country's second language in schools of business. Indeed, some German firms with big export interests already hold board meetings in English. The same is an increasing practice in Sweden and in the Netherlands.

As for the further spread of English, much will depend on what happens in India, a subcontinent of countless languages and dialects. The British promoted Hindi as a common language for India, but under mid-19th century reforms English was promulgated as the language of administration. Educated Indians today speak and write English fluently, and it is spreading faster in India than in any other country. Indians, even those from poor families, recognize English to be their passport to affluence, not least through telephonic outsourcing. Today millions earn their living by speaking English. India will soon be the world's most populous country. By 2050, India's population will be 1.6 billion, overtaking China's 1.4 billion. If India becomes a predominantly English-speaking country, China will have to follow suit or risk relegation. Thus, there are high stakes in the global language game. As Paul Johnson recommends, "Everyone should calm down and learn English."

BASKETBALL SALARIES

Some people have commented that physicians make too much money. Most physicians I know (whether they make a lot of money or not) work extremely long hours. I wonder how many hours per week the players in the National Basketball Association work. I believe they play about 72 games in a 6-month period. The average salary in the National Basketball Association is \$4.02 million per year (26)! The highest salary goes to Shaquille O'Neal of Miami, who makes nearly \$28 million per year in salary. Three others make either \$16 or \$17.5 million, and 21 others make \$13 to \$15 million per year. Of course, one has to be pretty good to be a professional player, but one also has to be pretty good to be a physician. Certainly one has to study hard to be a good physician. How hard one has to study to be a professional basketball player is unclear to me.

—William Clifford Roberts, MD
February 23, 2005

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