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# NATIONAL GEOGRAPHIC

SHENANDOAH  
RIVER 38  
LAS VEGAS 58  
ICE CLIMBING 82  
BERLIN 96  
CRINOIDS 118

## GENGHIS KHAN

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Exploding from their homeland in the 13th century, Mongol horsemen forged the largest land empire the world has ever seen. In this, the first of two articles on the Mongols' rise and fall, we chronicle the path of their first great leader, Genghis Khan. Part II will appear in the February 1997 GEOGRAPHIC.

— THE EDITOR

*Defiantly proud of their past, Mongols—like these youngsters racing at a summer festival—learn to ride at age four or five, just as their ancestors did eight centuries ago. History remembers the Mongols as the devil's own horsemen, scourge of the civilized world, led out of obscurity and into unimaginable power by one remarkable leader: Genghis Khan.*



# LORD OF THE MONGOLS

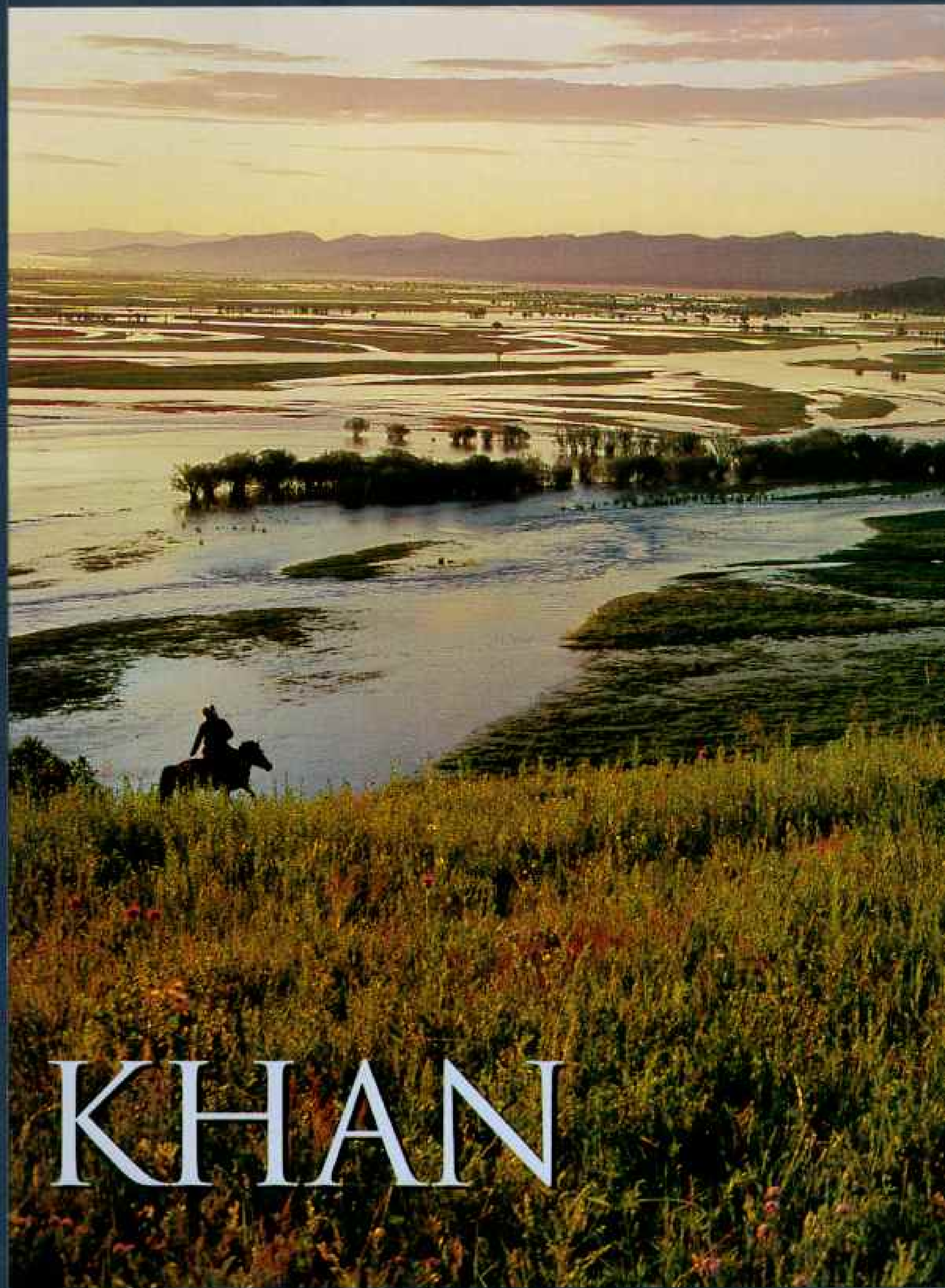


BRONZE PLAQUE OF GENGHIS KHAN, TSENKHER-MANDAL, MONGOLIA

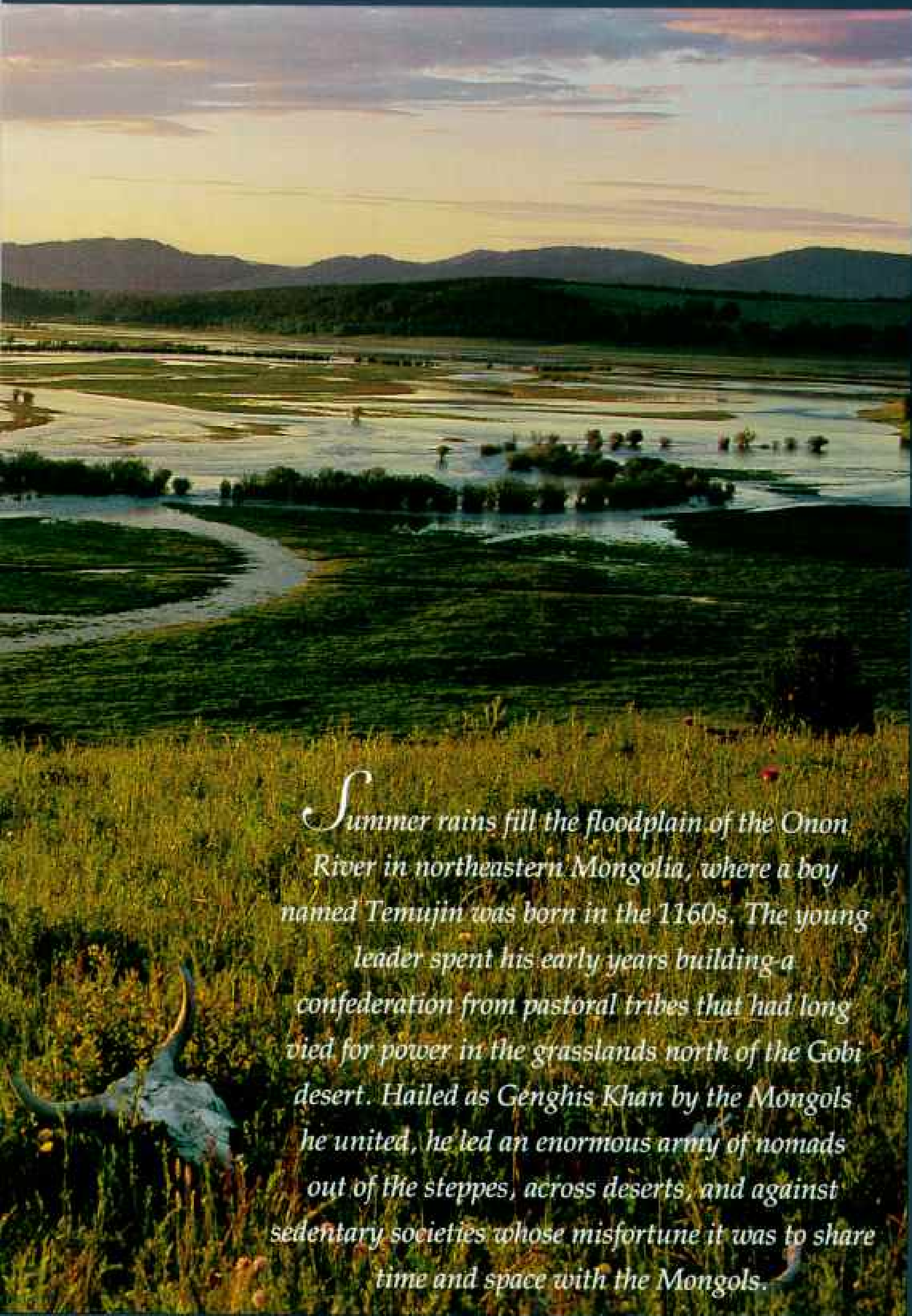
# GENGHIS

BY MIKE EDWARDS  
ASSISTANT EDITOR

PHOTOGRAPHS BY JAMES L. STANFIELD



# KHAN



*Summer rains fill the floodplain of the Onon River in northeastern Mongolia, where a boy named Temujin was born in the 1160s. The young leader spent his early years building a confederation from pastoral tribes that had long vied for power in the grasslands north of the Gobi desert. Hailed as Genghis Khan by the Mongols he united, he led an enormous army of nomads out of the steppes, across deserts, and against sedentary societies whose misfortune it was to share time and space with the Mongols.*





*In the countries that have not yet been overrun by them, everyone spends the night afraid that they may appear there too.*

—IBN AL-ATHIR, ARAB CHRONICLER

*The future great khan was said to have been born with an auspicious clot of blood in his hand. Legend says that his spirit will reappear in a boy—like infant Jargal Chinzorig in his family's felt tent, or ger—and lead Mongolia to new greatness. For many nomads, such as the Had family (below), days of tending horses pass as in the time of Genghis Khan.*

**I**N THE NORTHWEST WALL of old Samarkand stood a gate through which caravans embarked on the Silk Road. It was by that entrance, or the rubble of it, that I walked in. Through this same gate in 1220 rode Genghis Khan, who was about to ravage one of Central Asia's greatest cities.

Samarkand's population, by a modern estimate, was 200,000 or more. Its artisans produced saddles, copper lamps, and silver lamé. An aqueduct sluiced water across the arid steppe, making gardens bloom. There is only grass now, nibbled to the nub by goats. I see bits of porcelain and an occasional brick—nothing more. The remains of workshops, palaces, and all else lie beneath wind-heaped ridges and hillocks.

Samarkand, Bukhara, Urgench, Balkh, Merv, Nishapur, Herat, Ghazni: One after another the cities of Central Asia toppled before the horsemen bursting from the steppe of Mongolia (map, pages 15-16). Rarely had the world witnessed such a whirlwind of destruction.

Nor had an empire existed so vast as Genghis's sons and grandsons would establish—to be exceeded, in fact, only by the British Empire of the 19th century. In 1280 Mongol rule stretched from the Yellow Sea to the Mediterranean. Almost as quickly as the empire rose, however, it began to fracture into independent fiefdoms; such as the Golden Horde in Russia, a remnant of which hung on until 1502.

Off and on for more than three decades, first as a Peace Corps program officer, then as a journalist, I have traveled the Mongol realm. Afghanistan, which was part of it, was the first country that I fell in love with.

Ukraine was another. And Russia.

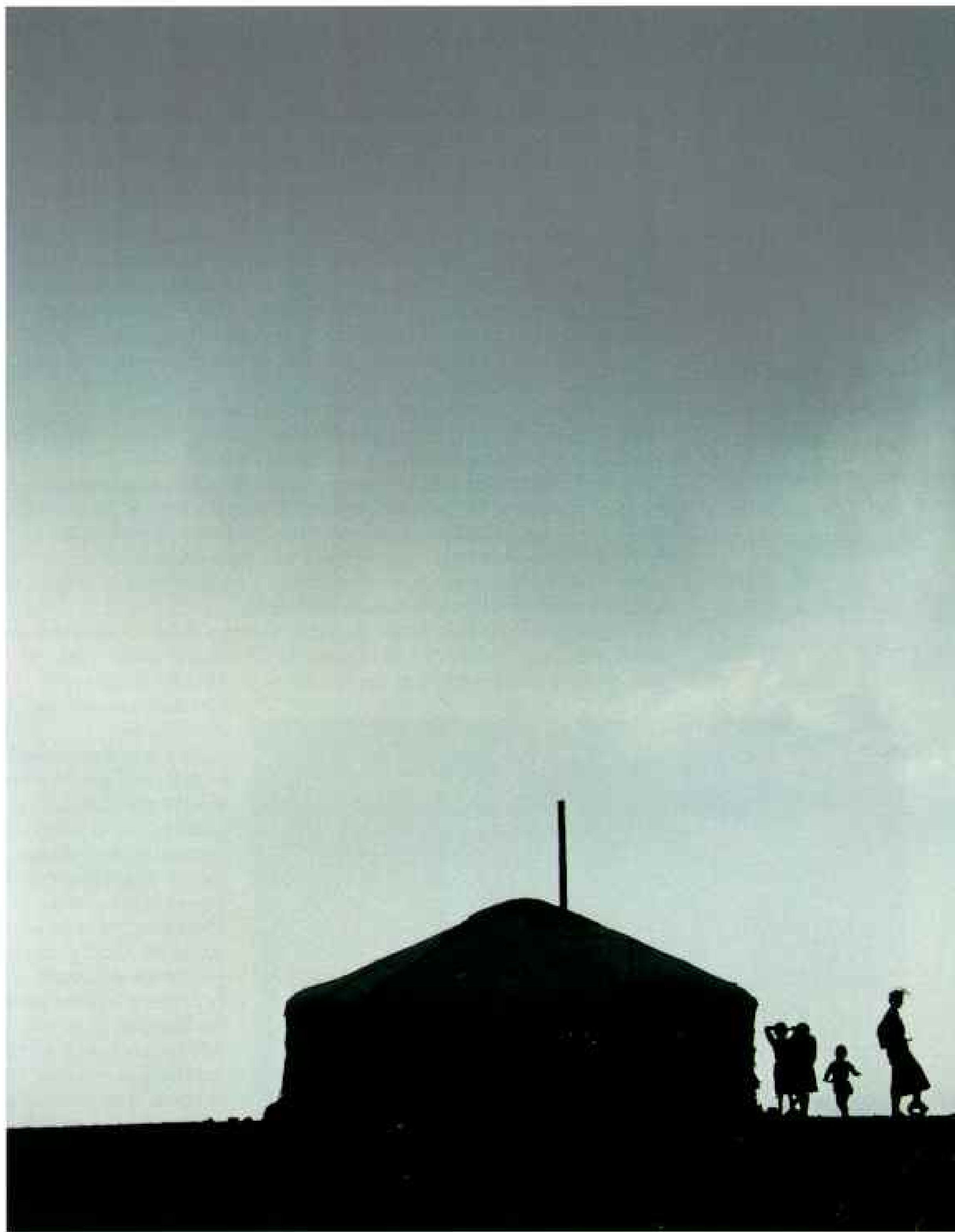
Last year I went back to Asia, and also to eastern Europe, to take another look at what remains from that cataclysmic era. I found that a good deal survives. The cathedral at Vladimir in Russia, for example, where the family of Prince Yuri died when the Mongols lit fires to drive them from the loft. And the fortress-like abbey in Hungary where monks, in all probability, hurled missiles upon their besiegers. And in Bukhara I glimpsed domes that, though dat-

ing from the 15th century, cannot be much different from those Genghis saw in the 13th.

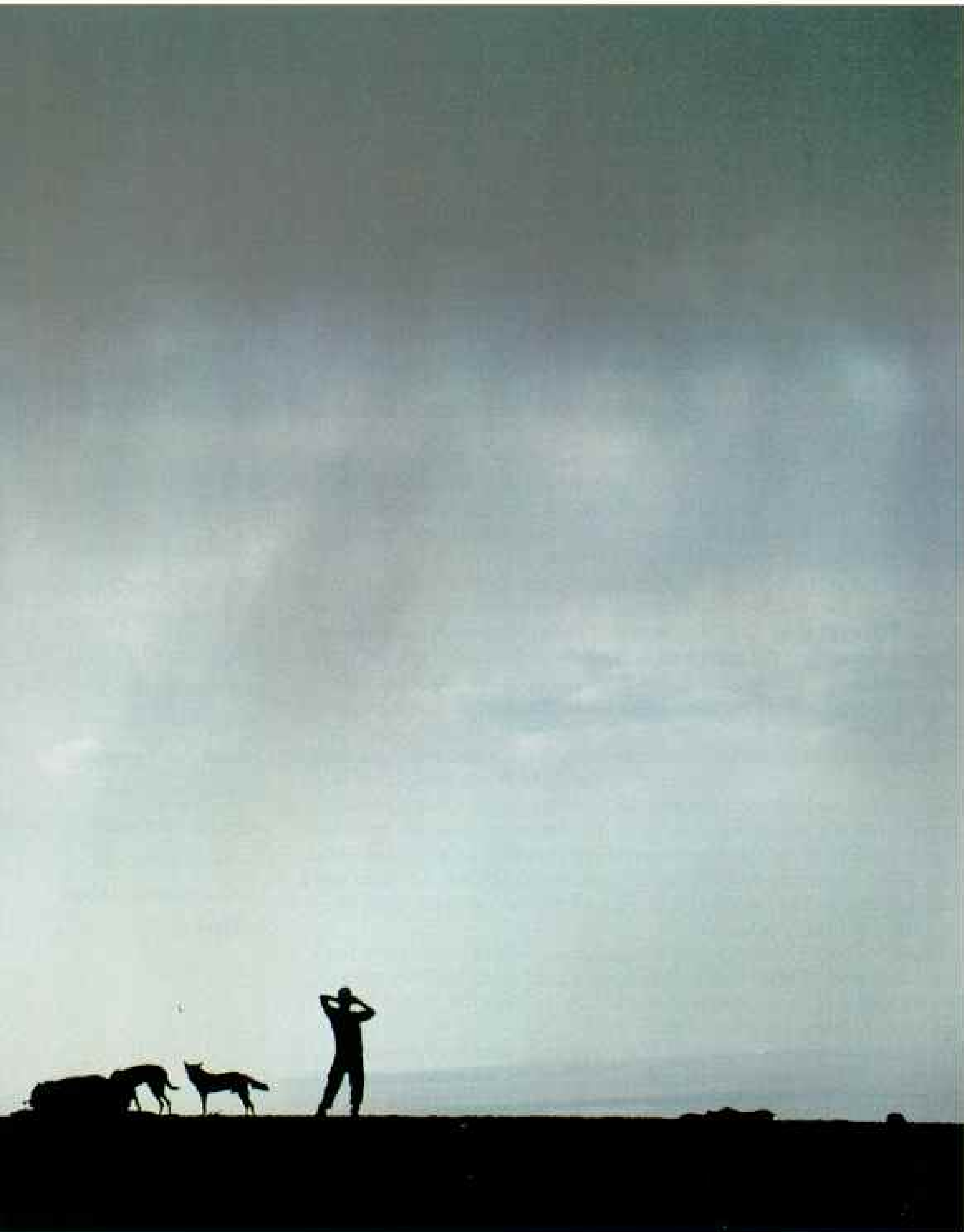
In Afghanistan even after 750 years people spoke of the Mongol rampage in voices tinged with apoplexy, as if it had happened yesterday. "Only nine!" exclaimed an old man in the once elegant city of Herat.







*A* desert storm sweeps toward a family of camel herders, whose seminomadic ways are still shared by about half Mongolia's 2.3 million people. After his father died, Temujin, at age nine, helped provide for his family, scraping past starvation and hardening himself for the turmoil to come.





"That is all that survived here—nine people!" I almost expected to see corpses in the streets.

The question usually asked about the Mongols is: Were they merely pillagers and killers? Not in Mongolian eyes. To Mongolia, Genghis was George Washington, first ruler of united Mongolia.\* And in China his grandson Kublai is likewise admired as a unifier. Also, to their credit, the Mongols were more tolerant of other religions than many regimes today. In Genghis's own clan were Buddhists, Muslims, and Christians, as well as worshipers (as Genghis was) of Tengri, the ruler of heaven. To be sure, mosques and temples were burned in besieged cities, but it was not Mongol policy to punish people for their faith.

Nevertheless, the Mongols killed ruthlessly—opposing armies as well as hapless noncombatants—and subjugated millions as they pursued the dream of empire. The 13th century was one of the most war torn in history, probably exceeded in cruelty only by our own. Crusaders marched in the Holy Land, Chinese dynasties fought one another, and several wars scourged Central Asia before Genghis invaded. Thus Genghis was a man of his time—only more so.

Yet some cities that offered no resistance escaped with payment of a tribute and with looting by the army—standard practices. Many rulers chose to collaborate. From their kingdoms the Mongols drew not only taxes but also troops; thus the Mongol army that sacked Baghdad in 1258 included Georgians, Armenians, and Persians.

Several cities that felt the Mongol fury thrived in what today is Uzbekistan, one of the five Central Asian nations that calved from the collapsing Soviet Union in 1991. In Uzbekistan, for instance, there is Samarkand, and as I stood upon the ruins and looked out on the tawny steppe, it was not hard for me to imagine Genghis's cavalry approaching—"more numerous than ants or locusts," more than "the sand of the desert or drops of rain."

This florid arithmetic is from the pen of a Persian historian, Ala-ad-Din Ata-Malik Juvaini, who wrote his *History of the World-Conqueror* as a Mongol civil servant. As I roamed the places of Mongol destruction, Juvaini was my loquacious informant. Historians consider his book an important account of Genghis's campaigns, but he was writing in part to please his masters, and, like other chroniclers of the time, he never met a fact that couldn't be hyperbolized. So modern historians fall back often on such words as "perhaps."

At Samarkand, however, the Mongols must indeed have seemed as thick as locusts. There were perhaps (see what I mean?) 80,000 riders, trailed by a great herd of spare mounts. And in front they drove thousands of civilians, a human shield.

Samarkand was the capital of Shah Muhammad of the Khwarizm empire, which sprawled westward to the Caspian Sea and included parts of what are today Afghanistan and Iran. Muhammad had invited disaster by slaying a Mongol ambassador and a caravan of traders. Juvaini says Muhammad had 110,000 troops in Samarkand and that when Genghis appeared, Muhammad speedily decamped with many of his men. After only a day's fighting the city's nobles opened the gates, praying for mercy.

"But there were soldiers who did not want to surrender," Yuri Buryakov, an Uzbek archaeologist who is an authority on Samarkand's fate, told me. "About a thousand took refuge in the mosque. They thought

\*Although modern scholars consider "Chinggis" the best transliteration of the Mongolian, we use "Genghis" in this article since it remains the most popular version of the Mongol ruler's name.

*A shaman dancer in a theater in Ulaanbaatar, Mongolia's capital, evokes the days when the young Temujin was told by his shaman that Tengri, the Mongol supreme deity, had ordained him to be master of the world. As Genghis Khan he never abandoned the animism of his ancestors, though he ordered that all religions be respected. The Mongols soon supplemented their beliefs with the religions of their subjects. Yet shamans, with their powers for prediction, retained their influence.*

they would be protected by Allah. They thought the Mongols wouldn't dare kill them there. But to the Mongols it didn't make any difference. They would kill anywhere."

The mosque was huge. Excavating its site in the 1980s, Buryakov found the remains of carved wood partitions and clay walls measuring 161 by 87 yards. "The Mongols shot flaming arrows. Maybe they hurled vessels of oil—Genghis had mangonels [catapults]. When we excavated, we found burned bones."

The city walls were leveled, as was the fortress that crowned the city core. Down too came the aqueduct, says Juvaini, and Samarkand's soldiers and citizens took "a sip at the cup of destruction." Buryakov estimates the dead at 100,000.

In time another Samarkand arose; I gazed at its domes from the ruins. This is the city of another formidable conqueror, Timur, or Tamerlane, a Turkic warrior who built a new empire in the 1300s, after the Mongol collapse.

Near those domes, coals glowed and hammers clanged. I approached Makhmud Dzhurayev, who is so proud of his forged axheads that he stamps them with his initials. "How would you like to go live in Mongolia?" I asked.

"Mongolia?" he stammered.

Then I explained. "If the Mongols captured Samarkand today, you might be taken to Mongolia because you have a skill."

Makhmud recovered. "Let it be the United States," he said. "Or Japan—I'd like to learn to make samurai swords."

Smiths, weavers, falconers, scribes, physicians: Juvaini says the Mongols marched 30,000 skilled men from Samarkand to toil in less developed Mongolia. With them, no doubt, went thousands of their women and children.

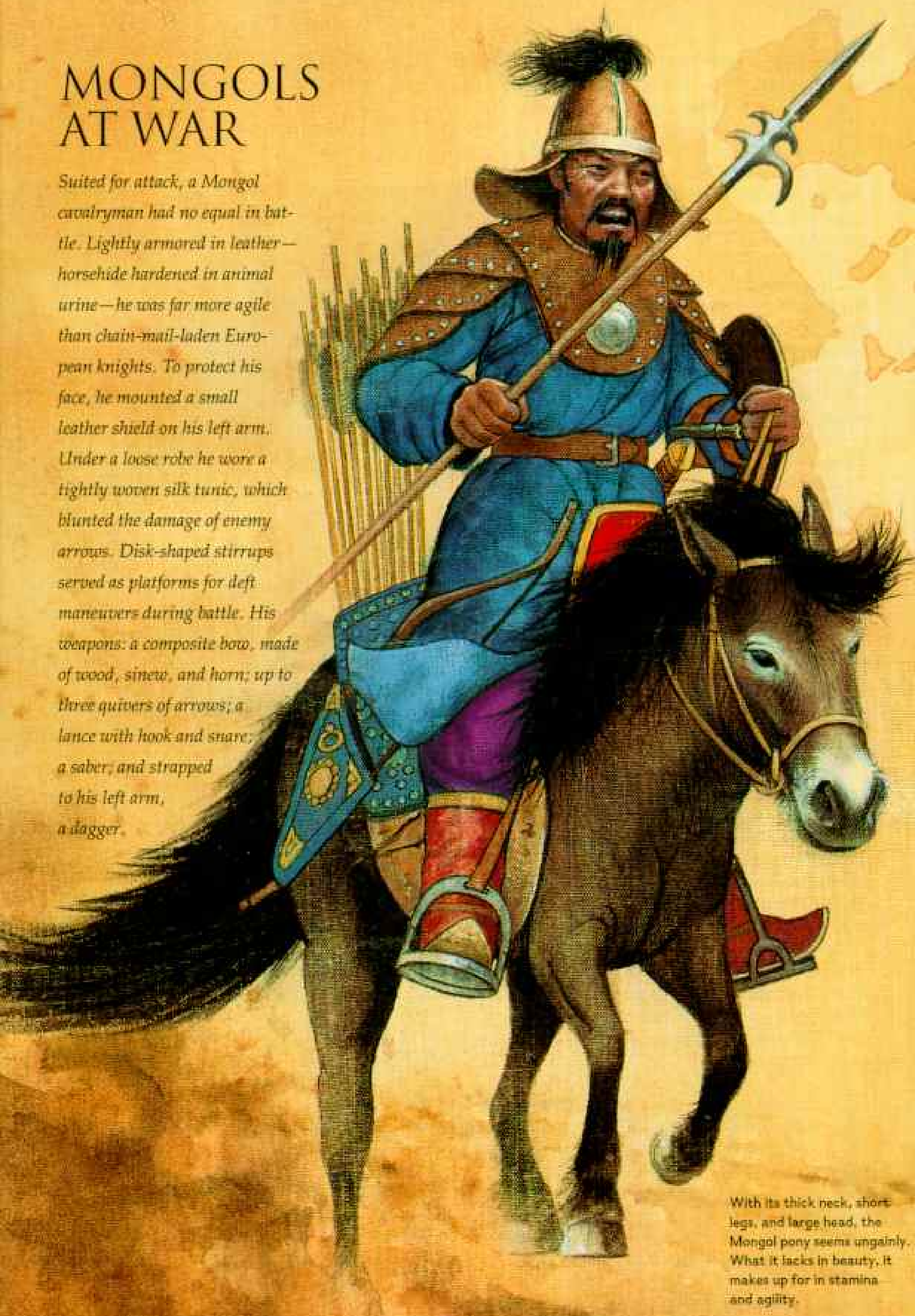


**I**N ULAANBAATAR, capital of Mongolia, I saw Genghis Khan every night at dinner. Peel off a few thousand-tugrik bills to pay the check, and there is cat-eyed Genghis, right on the money. He's on a vodka label too.

As a Soviet vassal from 1924 until 1990, Mongolia saw its history swept away, for Moscow feared any vestige of national pride. Ulaanbaatar's Buddhist shrines and lamaseries were cleared to make a Soviet-style city of wide, numbingly empty boulevards. *(Continued on page 20)*

# MONGOLS AT WAR

*Suited for attack, a Mongol cavalryman had no equal in battle. Lightly armored in leather—horsehide hardened in animal urine—he was far more agile than chain-mail-laden European knights. To protect his face, he mounted a small leather shield on his left arm. Under a loose robe he wore a tightly woven silk tunic, which blunted the damage of enemy arrows. Disk-shaped stirrups served as platforms for deft maneuvers during battle. His weapons: a composite bow, made of wood, sinew, and horn; up to three quivers of arrows; a lance with hook and snare; a saber, and strapped to his left arm, a dagger.*



*With its thick neck, short legs, and large head, the Mongol pony seems ungainly. What it lacks in beauty, it makes up for in stamina and agility.*





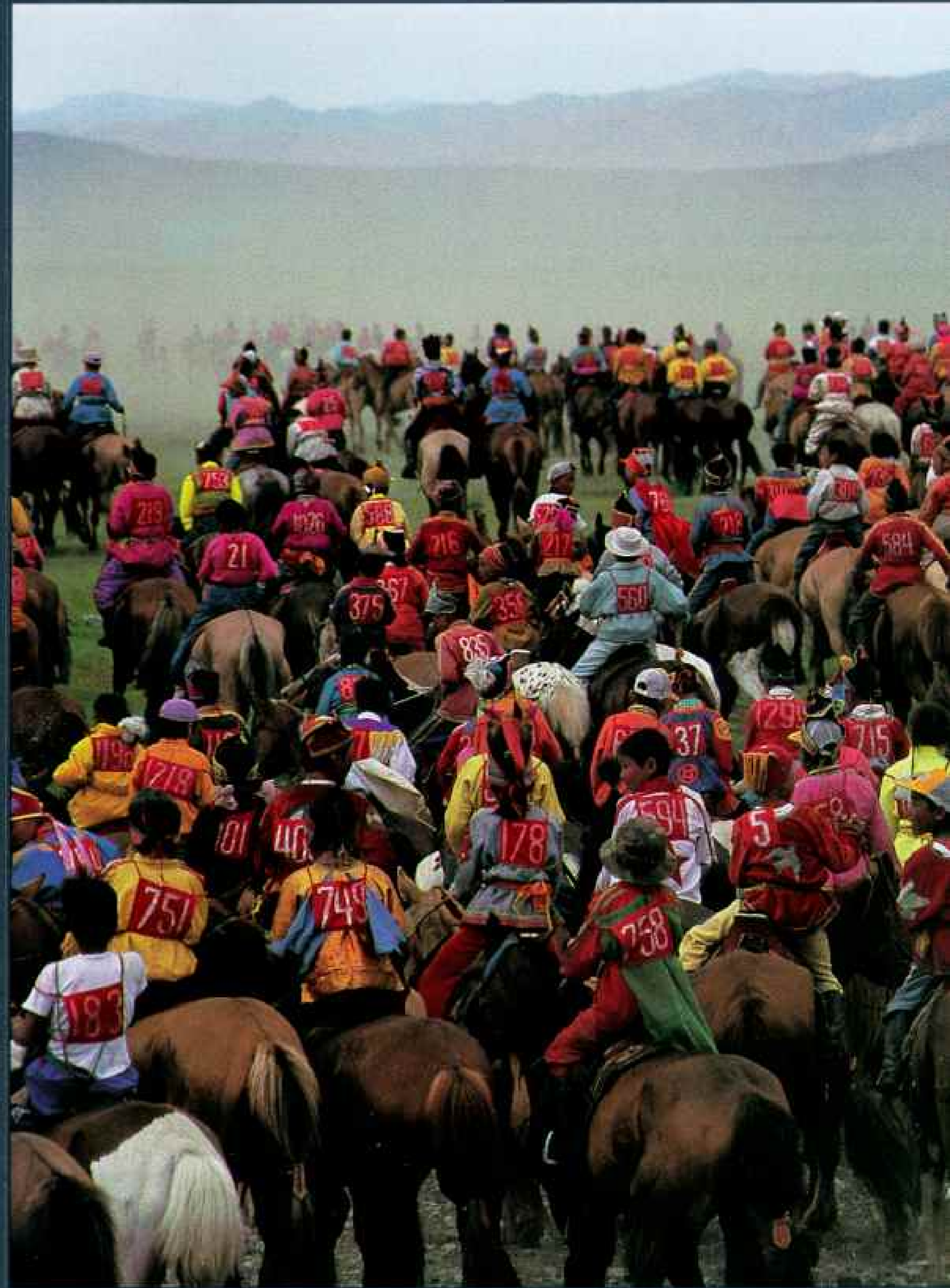


# BORN TO THE SADDLE

*T*wo days of horse racing, archery, and wrestling—Mongolia's traditional sports—fill the steppe near Ulaanbaatar at the annual Naadam festival (pages 18-19). Ranging in age from 5 to 12, riders include many girls. "Mongolia is unique among Asian cultures in its genuine respect for women," says Mongolian lawyer Munkh-Orgil Tsend. "What they lack



*in power, they make up for in wit." Though not in the cavalry, women dispatched the enemy wounded and collected arrows from the battleground. Some that they missed are now archaeological treasures at the National Museum of Mongolian History at Ulaanbaatar, along with Mongol boots. Squares of iron sewn in the lining protected the warriors' caloes.*









(Continued from page 13)

Professors had to portray Genghis as a "bloody feudal tyrant." When Mongolia regained its freedom, he was speedily rehabilitated as the father of his country.

Not that he had been forgotten. A shepherd whom I met one day—traditionally dressed in knee boots and sash-tied coat—knew that as a boy Genghis was named Temujin, which means "blacksmith," and that he and one of his brothers had killed their half brother, who had taken their fish. "The old people tell these stories," the shepherd explained.

"I know that story," I said, for I had read *The Secret History of the Mongols*, which is to Genghis what the *Odyssey* is to Odysseus. I mentioned, too, that the *Secret History* says Temujin feared dogs.

"I never heard that; I don't believe that!" the shepherd retorted hotly.

With its sometimes unflattering portrait of Genghis, the *Secret History*—so named by Chinese archivists—seems to be more than a panegyric written to enhance his reputation. "It is full of myths and legends," says Larry Moses of Indiana University, who has taught Mongol history for 25 years. "But some of it can be corroborated in Chinese sources."

JIM STANFIELD, a former staff photographer who has shot more than 60 articles for the magazine, visited ten countries for this assignment.

*F*or Genghis and his army the road to China lay across the immense Gobi desert. With a mobile force, including the same Bactrian camels used today (right), the khan's army and its logistical-support ranks of women, children, and elderly crossed the Gurtan Sayhan Mountains



*(above) and followed what is now China's Gansu corridor into the Tangut kingdom of Xi Xia. Though the capital was fortified, the king bowed to the Mongols' superior force and swore fealty to the great khan — opening the way for him to attack the Jin empire in 1211.*

The *Secret History* relates that Temujin was born by the Onon River some 200 miles northeast of Ulaanbaatar. I wanted to see that country, so I hired a four-wheel-drive van. Once you leave the capital, pavement is a novelty, and my driver chose trails from landmarks on the horizon. Forging streams, we dipped and rose across saucer-shaped valleys of grass. To pause on an October morning and walk on one of the saucer rims is to exult that this beige land is yours alone. Then you see a stipple of gray: a herd of sheep, watched by a shepherd on a shaggy-maned horse.

Somewhere out there, you will also see a *ger*, as Mongols call their round tent. We stopped at one to ask for hot water for tea. A woman named Gunga hospitably put a kettle on her stove.

I asked if she wouldn't rather live in a house. "You can't move a house," she answered, as if that were all that mattered. "You can't take it here and"—gesturing with her hands—"here and here." To me, Gunga's home looked pretty permanent, with beds and chests, even pictures on the felt walls. But she told me that she and her family had moved three times that year to find good pastures for their animals. To collapse a *ger* takes only an hour or so.

Onward. We turned north across the grassland. I thought about the dots of virgin prairie that have been saved in the United States so that our grandchildren can see what it looked like before the coming of the plow. Mongolia has enough grass to make five Kansases.

At last we crossed the Onon River and reached a great sweep of valley named Gurvan Nuur. No Mongolian can say absolutely where Temujin came into the world, but many believe this to be the revered place.

On one side of the valley was Bayan-Ovoo, a village of log houses, where a fellow by the name of Baldansanja Chimedorj took it upon himself to be my guide. Pride motivated him, not cash. He showed me a spurt of crystal water—the very spring, he assured me, where Temujin's mother washed her newborn son. And there, he proclaimed, indicating a pine-clad mountain, is the peak where Genghis worshiped—"He put his battle emblem there before fighting."

*There was once a blue-gray wolf who was born with his destiny preordained by Heaven Above. His wife was a fallow doe.*

—LEGEND OF THE ORIGIN OF GENGHIS KHAN, FROM *SECRET HISTORY*

**W**HEN TEMUJIN IS BORN, in the 1160s, Mongolia is a realm of perhaps 30 nomadic tribes, with a total population between 1.5 million and 3 million. Roughly half are Turkic-speaking peoples who predate the Mongols themselves. From this same territory an even earlier people, the Xiongnu, raided China for centuries; they may have been the same people as the Huns, who scourged Europe in the fourth and fifth centuries.

The *Secret History* offers a wealth of detail on Temujin's rise to power. At first, life is difficult. When Temujin is nine, his father, Yisugei, a minor chieftain, is poisoned by Tatar tribesmen. It is revenge, for Yisugei once robbed them. To survive, Temujin and his brothers catch fish and snare marmots, and their mother gathers berries.

As a young man he makes allies. One is Jamuqa, who becomes his *anda*, or blood brother. Another is Toghril, a leader of the Kereyit tribe. When the Merkit tribe kidnaps Temujin's teenage bride, Borte, in a raid, these friends muster warriors to rescue her.

In manhood Temujin gradually brings several tribes under his control



*R*emnants of a lost civilization, the tombs of Xi Xia royalty are landmarks for shepherds in China's Ningxia region.

Here in the 11th century a Tibetan-speaking people known as the Tanguts exacted tribute of tea, silk, and silver from southern China's





*Song dynasty. Buddhists with their own alphabet and a host of walled cities, the Tanguts were the first to fall when Genghis Khan began his foreign conquests. Chafing at the Mongol yoke, they were crushed and their civilization obliterated.*

by conquest or bestowal of booty. Defeating the Tatars, who killed his father, he is merciless. All but the smallest males are killed; children and women are enslaved. The Tatar tribe ceases to be. (In Europe, however, a variation of the name, "Tartars," was for centuries used to refer to the Mongols.)

Alliances shift. Temujin's friends Jamuqa and Toghril oppose his growing power. Temujin crushes Toghril's army in a fierce three-day clash. Then, in 1205, he defeats the Naiman, his last powerful enemy tribe. With them is Jamuqa, who is captured. "Let me die quickly," he asks. Temujin grants his blood brother's wish.

In 1206, at a *kuriltai*, or great assembly, Temujin is enthroned as Genghis Khan — "strong ruler" or perhaps "oceanic ruler," hence ruler of the world. He is about 40.

Larry Moses believes the struggles between Temujin and Toghril and Jamuqa did happen. "Chinese records mention them," he says. "Still, it's interesting that the narrative closely follows the Old Testament story of David, Saul, and Jonathan." Genghis's eulogist, the originator of the *Secret History*, may have been a Christian of the Nestorian sect, says Professor Moses.

Followers of a Persian prelate, the Nestorians split from the Byzantine church in 431 in a fight over dogma and became early proselytizers in east Asia. Many Mongols were their followers.

Before leaving the valley of Gurvan Nuur, I climbed a hill for a last look. Below, a boy skipped across a stream and leaped onto his pony, as

if imagining himself a warrior on some valorous quest. The Mongolian horse was, according to one historian, the guided missile of warfare. Small but sturdy, it remains an essential ingredient of rural life. Boys and girls whose feet cannot yet reach the stirrups ride as easily as they walk.

Perhaps the boy I saw was another Temujin; some Mongols believe a new Genghis will appear and restore their greatness.

Back in Ulaanbaatar, I turned off Genghis Khan Avenue (formerly Lenin Avenue) to call on Shirendev Bagaryn, now retired from a long career as a historian and president of the Mongolian Academy of Sciences. The question I wanted to ask was: What drove Genghis to conquer?

"Once you are strong you want to go find out how other people live," he said, expressing a gentle view of the national hero. "He needed their knowledge to develop his country." For example, Genghis borrowed for the mostly illiterate Mongols the script of the Uygurs, his advanced Turkic neighbors in what is now western China.

Genghis's troops expected conquest to yield gold, jewels, silks, horses, and slaves. Genghis seems to have cared little for loot, but warfare was an old tradition among the nomads, and according to Rashid ad-Din, another chronicler in Mongol service, Genghis once declared: "Man's greatest good fortune is to chase and defeat

his enemy, seize his total possessions, leave his married women weeping and wailing, ride his gelding, use the bodies of his women. . . ." In other words, conquest.

And the more he did it, Shirendev acknowledged, the more he wanted to do it. He quoted a proverb: "When you are eating, your appetite grows."

Other historians see Genghis as motivated at times by the need to feed his people and provide them with horses and at other times by revenge (that was the fate of Central Asia). "I don't think he consciously set out to be a conqueror," says another Mongol expert, Morris Rossabi of Columbia University and City University of New York. "In general, he didn't try to hold on to territory, except for Mongolia."



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*They do not need a baggage train or stores, since they have with them sheep, horses, and other animals, and live exclusively off their meat.*

—IBN AL-ATHIR

*Deadeye marksmanship favors no gender at the Naadam festival, where a young Mongolian woman competes in archery finals.*

*In Genghis's time, skill with bow and arrow was essential. Firing as many as six arrows a minute, 70,000 Mongol cavalymen slaughtered a Jin army blocking their way into northern China in a battle such as the one depicted in a 14th-century Persian manuscript (opposite). The emperor of the Jin, heir to a dynasty that had ruled northern China for more than a century, sued for peace and gave Genghis a Jin princess to be his bride.*

**T**HE MONGOL ARMY was on the move soon after Genghis became great khan. Genghis's first campaign beyond Mongolia was in 1209 against the kingdom of Xi Xia. Its capital, Ningxia, stood at the site of the modern Chinese city of Yinchuan, and to reach it, the Mongols had to cross the harsh Gobi desert. Such travel was no great obstacle to nomads who, in a pinch, subsisted on mare's milk and blood drawn from a slit in a horse's hide.

Ruled by the Tanguts, a Tibetan people, Xi Xia produced fine cloth. More important, in Professor Rossabi's mind, it controlled oases along the Silk Road and exacted heavy taxes from Mongol caravans.

The army that Genghis led south already was being molded into the

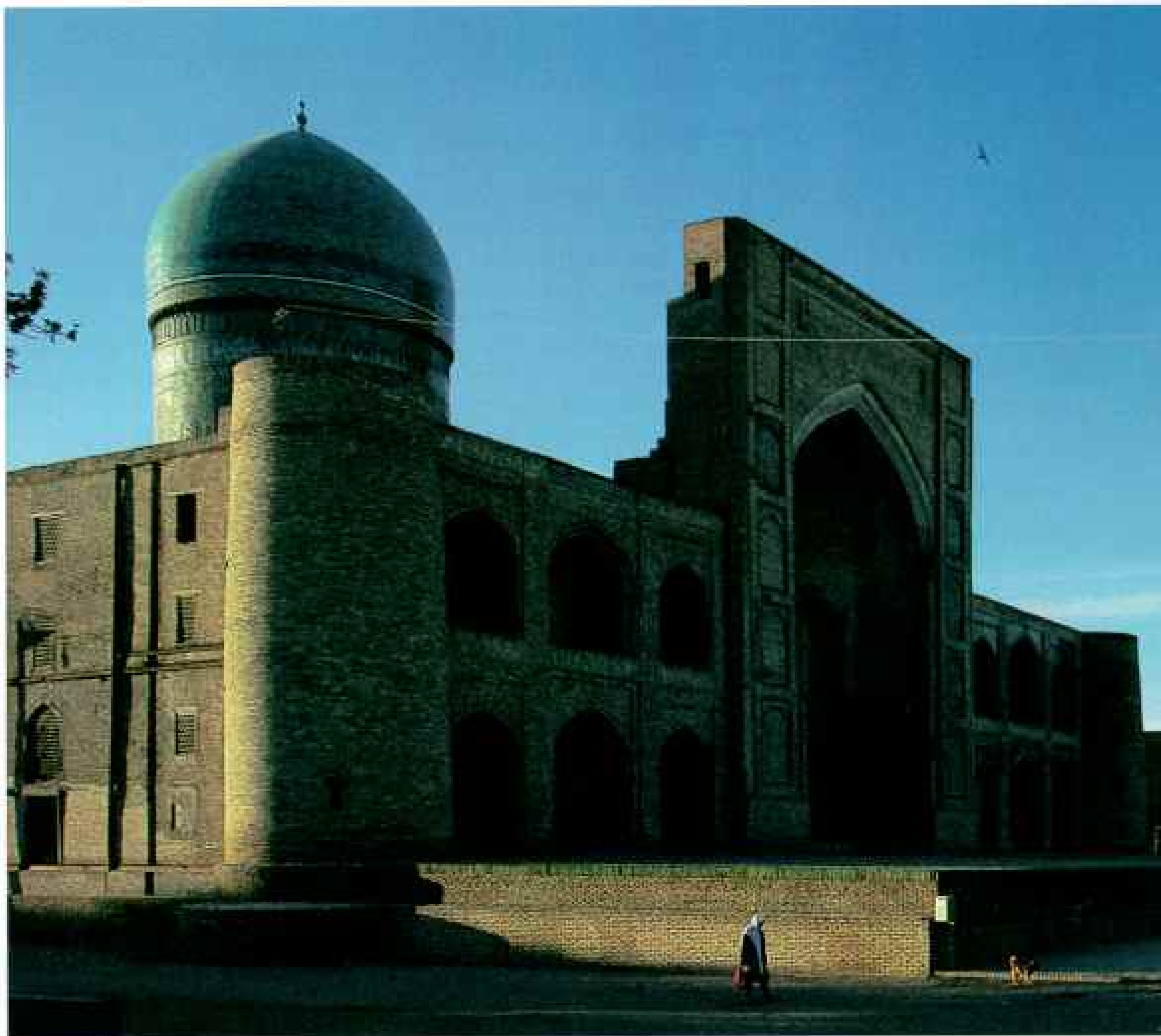


disciplined force that would ride into Europe and deep into China. He organized his troops on a decimal system: the squad (*arvan*) of 10 and company (*zuun*) of 100 up to the division (*tumen*) of 10,000. Moreover, he erased tribal hierarchies. Kereyits, Merkits, and others were scattered among various units, and command went to proven campaigners, not tribal chiefs.

Genghis also created a 10,000-man personal guard and kept hostages from powerful families. The possibility of a revolt obviously worried him. In fact, Larry Moses believes, Genghis attacked Xi Xia in part because some of his tribal enemies had fled there.

Xi Xia had a population of perhaps five million and a large army that seems not to have been well led. When Genghis came against the enemy in a mountain pass and could not break through, he feigned withdrawal, a favorite Mongol trick. The Xi Xia army came out in pursuit. Suddenly the Mongols turned, raining arrows and capturing the Xi Xia commander. Emperor Xiangzong sought peace in 1210, offering tribute and a daughter to marry Genghis. Xi Xia was now regarded as a vassal.





**I**NEVITABLY the Mongols turned covetous eyes upon the kingdom east of Xi Xia. It had at least 20 million people and was vastly richer. Time and again this part of what is now China (unified in 1279 under Genghis's grandson Kublai) had yielded to raiders such treasures as jade, silk, and gold Buddhas.

In Genghis's era the north China cornucopia was ruled by people known as the Jurchen, who called their dynasty Jin ("golden"). Like dynasties before, the Jin bestowed tribute on the nomads and traded luxury goods, grain, and implements for their animals and hides. Terms were generous. "It was a kind of bribe," explains Rossabi, "to keep the nomads from attacking."

But this largesse was drying up, for the Jin had fallen on hard times. Moreover, there were political problems. Native Chinese resented the Jurchen overlords. Disloyalty troubled the army. Genghis knew these things from merchants and defecting Jin civil servants. He knew too that much of the huge Jin army—600,000 or more troops—was tied down on the regime's southern flank, after years of war with the Song dynasty. Thus Genghis took aim at a hobbled regime. In fact, nearly all his victim states were crippled by internal dissent or other problems.

*U*nder the shadow of the great minaret at Bukhara, 20,000 garrison troops tried to escape the Mongols in 1220, but were cut off and slaughtered. Genghis himself rode a horse into the Friday Mosque and had cases emptied of copies of the Koran, the holiest Muslim text.



*They were then filled  
with grain for Mongol  
horses. The city was  
burned, its walls razed.  
A witness who escaped  
said: "They came, they  
sapped, they burnt, they  
slew, they plundered,  
and they departed."  
Spared the apocalypse,  
the minaret still soars  
above Bukhara.*

In 1211 the army set out, 70,000 strong. The Great Wall as we know it did not exist, though lesser walls did. Genghis easily broke through them; Chinese texts say dispirited frontier troops even went over to him.

But many battles lay ahead. Elite troops of Genghis's enemy waited in the Juyong Pass to intercept the Mongols, who were heading to the capital, Zhongdu, buried today beneath sprawling Beijing. One of Genghis's trusted generals, Jebe, who was nicknamed "Arrow," caught the defenders off guard by using the feigned retreat trick.

Genghis did not march immediately on Zhongdu. His horsemen were superb with the bow, able to shoot forward or backward at full gallop, but he lacked the means to attack Zhongdu's 40-foot walls. Instead, Genghis sent his troops to ravage the heartland; the booty would keep them content.

When at last he surrounded the capital in 1214, his arsenal included Chinese bombardiers and mangonels powered by plunging weights that could hurl hundred-pound stones against walls and gates. These were not needed, however. Beset with internal problems, Jin Emperor Xuanzong offered gold, silver, and other treasure if the Mongols would withdraw. Genghis was presented with a Jin princess — yet another wife (he would

have six Mongol wives and many others from foreign conquests). She came with 500 servants.

Alas for the Jin, they hadn't seen the last of the Mongols. When the emperor moved his capital south to Kaifeng, distancing himself from this barbarous foe, Genghis suspected him of regrouping to attack. Or perhaps that was just Genghis's excuse. The Mongols stormed back in 1215 to starve Zhongdu into submission, then to sack and massacre. Genghis carried off a hoard of imperial treasure. Years later a traveler, seeing a white hill, was told it was the bones of Zhongdu's inhabitants.

The Mongols had overrun a territory about the size of New York State. Envoys from Korea arrived, offering to pay tribute; they knew the fate of Zhongdu. Genghis expected north China to pay as well, but he seems not to have considered attaching it to Mongolia.

*In retribution for every hair on their heads it seemed that a hundred thousand heads rolled in the dust.*

—JUVAINI: GENGHIS AVENGING THE KILLING OF HIS TRADERS

**R**ETURNING TO MONGOLIA, as he always did after a campaign, Genghis began to think of building a capital. From Xi Xia he had claimed 30,000 artisans, some of whom may have helped raise his citadel, Karakorum, where trade routes intersected on the Mongolian grassland.

Perhaps Genghis intended Karakorum to become a monumental city such as those he had seen that were built by the Chinese and the Xi Xia Tanguts. It never achieved such greatness, although it had huge palaces for the ruler and his kinsmen as well as a treasury, a mosque, a Buddhist temple, and probably a Christian church. Chinese invaders destroyed the city in 1388.

*“I am the punishment of God,” proclaimed Genghis after leaving the mosque at Bukhara (opposite). “If you had not committed great sins, God would not have sent a punishment like me upon you.” Though his words may be legendary, he indeed seemed a divine scourge. Today worshipers (below) gather in a 16th-century mosque built on the same site.*





Ever the borrower, Genghis had co-opted a scholar in China to advise him on building a government. Uygurs were recruited as accountants and scribes. Soon a school was turning out Mongol administrators, who swelled the small bureaucracy of tax collectors and record keepers.

Meanwhile, Genghis was troubled by events in Kara-Khitai, at Mongolia's western edge.

Kuchlug, a renegade prince of the Naiman, the formidable tribe that Genghis had defeated in Mongolia, had seized power in that kingdom. And Kuchlug was gathering other allies. Did he plan to attack Genghis? Jebe attacked in 1218 with 20,000 horsemen.

Most of the people of Kara-Khitai were Muslims. Kuchlug had forbidden them to worship and had even crucified an imam. So when Jebe appeared at the walls of Kashgar, where Kuchlug was sojourning, there was rejoicing—a rare reception for the dreaded Mongols. Kuchlug was beheaded, and Genghis took the friendly people of Kara-Khitai under his wing.

Now that his realm touched the Khwarizm empire, Genghis sent an array of gifts to Shah Muhammad at Samarkand: jade, ivory, gold, cloaks of white camel

wool. Genghis also proposed trade and sent out a caravan of 450 merchants. They only reached Utrar at the eastern edge of Muhammad's realm, where the governor, suspecting that they were spies (some probably were) seized and executed them. Juvaini says Muhammad approved this. In any case, he soon made a worse mistake.

When Genghis sent an ambassador to demand that the shah hand over Utrar's governor for punishment, Muhammad killed the envoy and sent his head to Genghis. "The Mongols believed in the absolute inviolability of ambassadors," Morris Rossabi points out. "To harm them was a heinous crime." Hence the terrible Mongol campaign in Central Asia was punitive—with, we can assume, the added incentive of great booty.

No doubt Muhammad felt secure. His army, it is said, numbered 400,000, but many were of uncertain loyalty. Nor did Muhammad enjoy the fealty of his heavily taxed subjects. Again it was a crippled regime that braced for a Mongol onslaught.



PAINTING FROM 14TH-CENTURY PERSIAN MANUSCRIPT, INDIA OFFICE LIBRARY, BRITISH LIBRARY



CORPUS CHRISTI COLLEGE, CAMBRIDGE

Genghis's army never exceeded 110,000 men, modern historians say. Before attacking Khwarizm, he requested soldiers from Xi Xia, his supposed vassal. Back came a tart reply: If Genghis did not have enough troops, he had no business being khan. That insult would be avenged too.

Though outnumbered, Genghis boldly split his forces as he advanced in 1219. One column besieged Utrar, another attacked farther south. Genghis rode west to Bukhara. Muhammad froze; he had no strategy to counter envelopment, other than to keep his troops hunkered down in his cities. At Utrar a garrison of several thousand held out for a month or longer, as boulders whistled from Mongol mangonels and rooftops were bombed with flaming naphtha—probably a stubborn-burning mixture of sulfur, niter, and petroleum. Inalchug, the governor who had slain Genghis's traders, fought to the end, flinging bricks from the top of his fortress. The victors leveled the citadel and the city walls. Utrar's artisans would now ply their skills for Mongol benefit.

**T**HE SILK ROAD took me from Samarkand to Bukhara. This part of the route is a paved highway traveled by trucks carrying shoes and T-shirts from China or soda pop and snacks from Turkey. Here and there you see the arch of a caravansary, where for centuries traders stopped to refresh their animals.

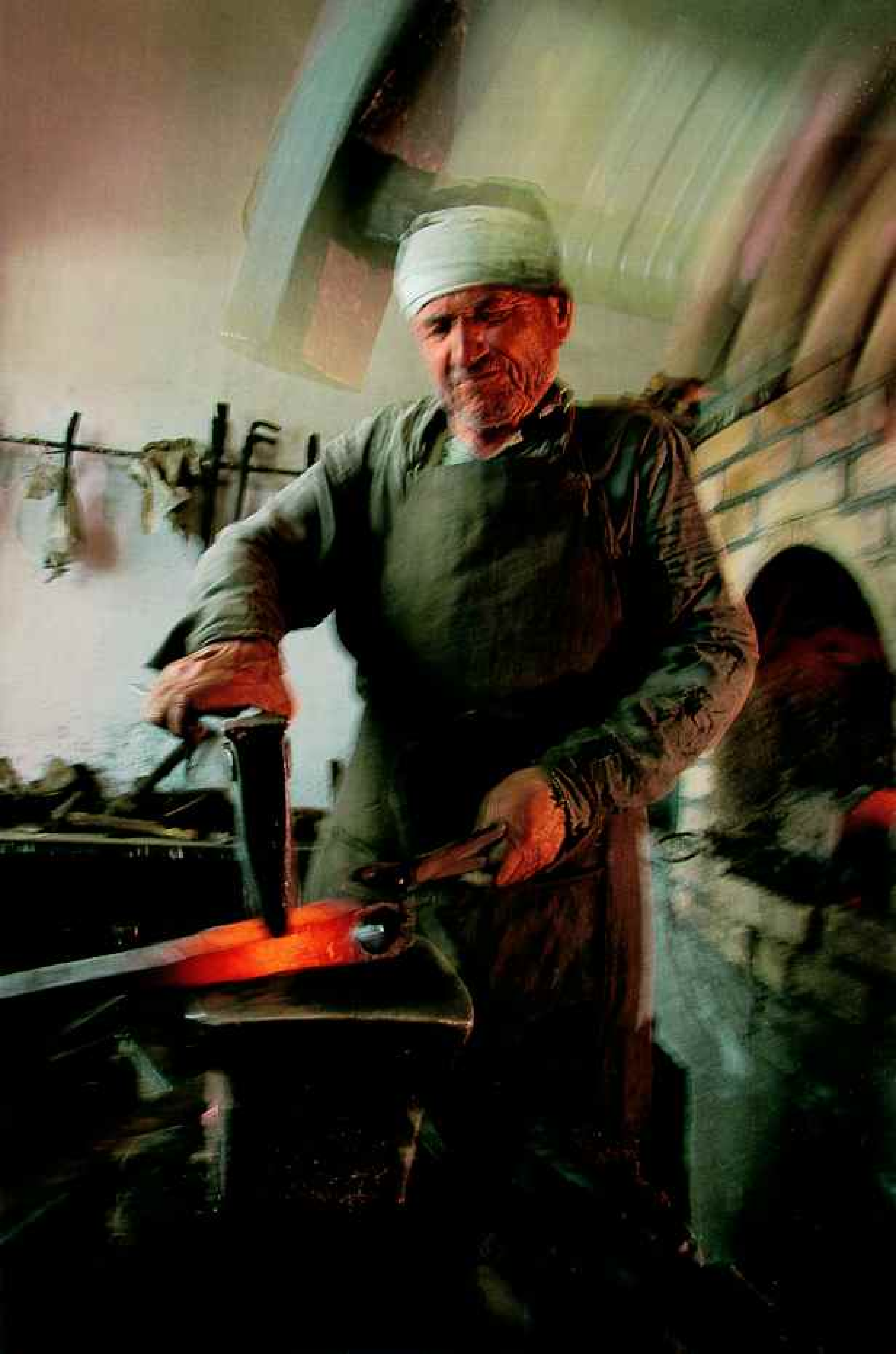
But along this segment of the Silk Road cotton is king today. In fields that spread to the horizon the crop had been picked, and men and women were gathering the stalks, fuel for the winter.

Though the highway is busy, Bukhara, which Juvaini called the "cupola of Islam," is a shrunken shell. Under Soviet rule many of Bukhara's mosques and religious schools—dating from the 15th century, when the city enjoyed



*H*orrific though they were, Mongol atrocities were worse in rumor and calumny—as in the dismemberment, roasting, and cannibalism portrayed in a 13th-century English illustrated manuscript.

The khan's lieutenants did not waste such valuable resources as skilled craftsmen. In Samarkand they were rounded up and taken to Mongolia; metal workers, including blacksmiths who still ply their ancient trade, were especially valued. The Mongols were delighted by Samarkand's great fountains and displays of produce (left).





a post-Genghis renaissance—were demolished. I gaze across a plaza once filled with scholars and merchants. A few men sit there, looking as old and gnarled as the nearby mulberry trees girding the rim of a disused cistern. But over the narrow, winding streets a few domes still appear, and Genghis would recognize the 150-foot-high minaret of the Friday Mosque.

Legend credits Genghis with crossing the supposedly uncrossable Kyzyl Kum desert, 300 miles wide, as he swung southwest to Bukhara. In legend Genghis usually accomplishes the impossible. In truth, historians say, he sensibly followed roads that skirted the wasteland.

As at Samarkand, the city fathers opened the gates. Reaching the Friday Mosque—so big that he thought it was a noble's palace—Genghis rode into its courtyard. "He had all the musicians of the city summoned," said Bahadur Kozakov, who is curator of Bukhara's museum. We sat in his small office, which was made warm and mellow by the slanting autumn sun. A kettle bubbled with water for tea. "Genghis listened to the music," Bahadur continued, "and started to drink wine and his *koumiss* [fermented mare's milk]. But he wasn't just having a party. He ordered the nobility brought to him with their riches. When their gold and stones were at his feet, he gave the city to his troops to rob. The nomads loved to rob cities. They took everything. They raped the women. The mosque was burned, and the fire probably spread. It was complete disorder."

**T**HE MONGOL HORDES rampaged on, toppling Urgench, a great Silk Road city on the Amu Darya south of the Aral Sea, after a fierce battle; 100,000 defenders were said to have been slain. The Mongols diverted the river to flood the city's remains.

They moved south to the city of Merv, in present-day Turkmenistan. In its rubble a Muslim holy man and his helpers spent 13 days counting corpses, according to Juvaini, who says they tallied 1.3 million—"taking into account only those that were plain to see." Balkh, in Afghanistan, fabled "Mother of Cities," surrendered. Its citizens were massacred anyway—"divided up according to the usual custom into hundreds and thousands to be put to the sword."

Several Muslims wrote accounts of the butchery in these Islamic cities, and their reputed tolls are invariably enormous. In Nishapur, one said, the Mongols killed even the dogs and cats. Perhaps the chroniclers' fealty to their boastful Mongol employers led to exaggeration. Large though these cities were, no one today thinks they had populations of such magnitude. And did the Mongols really line up and slaughter civilians? "I can't believe they would have wasted time doing that," Larry Moses told me. "The Mongols pretty much annihilated the armies they came against, and a lot of civilians were marched in front of the army as cannon fodder, but I don't think civilians were simply wiped out. The Mongols needed people to move their packtrains and siege weapons."

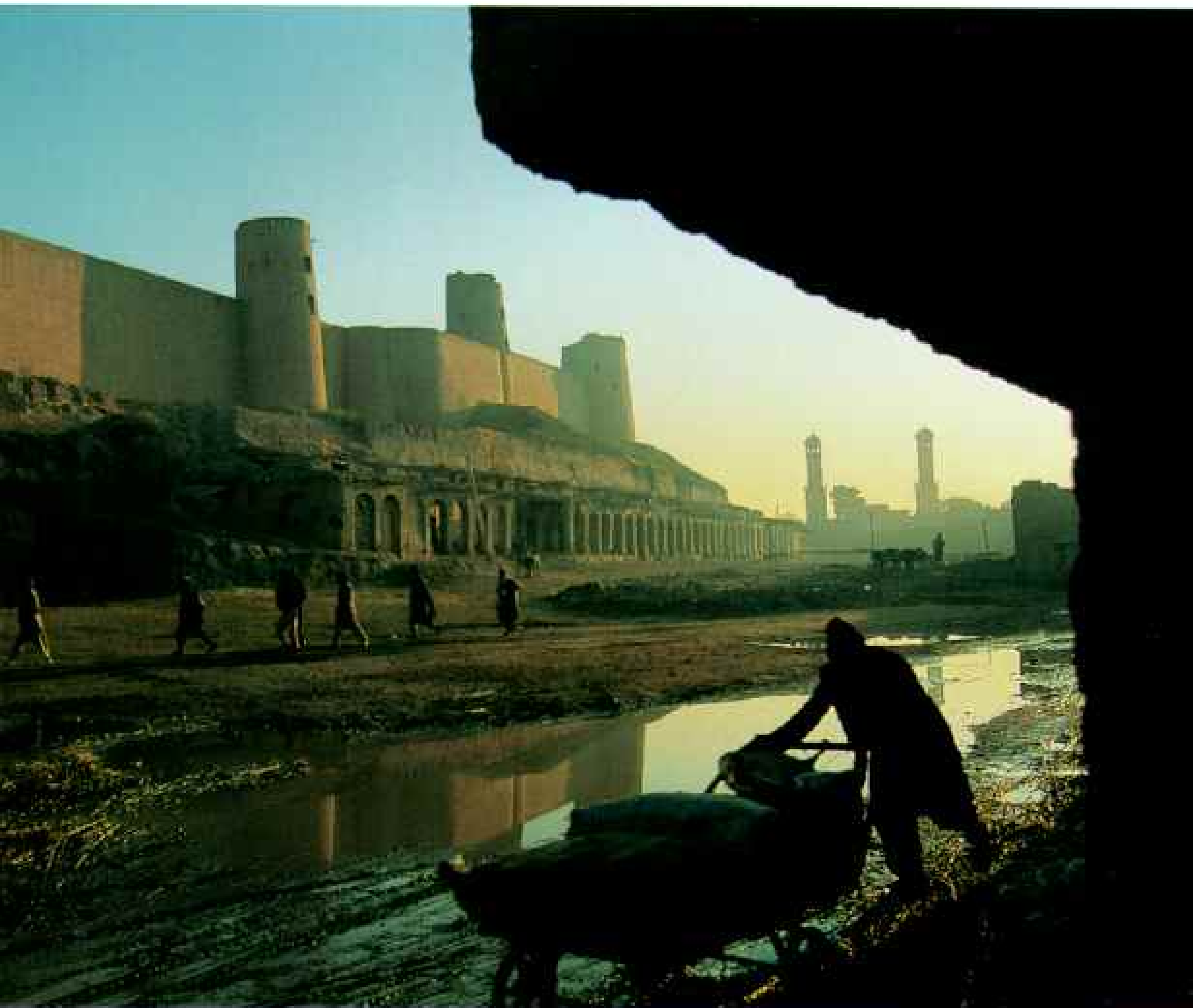
According to Morris Rossabi: "There's no question that there was a great deal of destruction. Not all the cities were butchered, but some became examples to sow terror in others. It was psychological warfare."

By one theory, Genghis determined to leave no city intact that could succor his enemies. Both Shah Muhammad of Khwarizm and his son, Jalal ad-Din, were still at large, and Jalal, a formidable leader, had gathered thousands of men to his banner.

Indeed there were uprisings—a serious one, for example, in Herat in western Afghanistan. I remember Herat as Afghanistan's jewel, with rich traditions in the arts and religious scholarship. Almost three decades had passed since I, a dazzled Peace Corps bureaucrat, had stood in the



*The Ark of Herat, raised on the ruins of a fort built by Alexander the Great, was one of the few structures to survive Mongol wrath when Genghis ordered the slaughter of the city's inhabitants. He had spared them when he first took Herat in 1221. When citizens later had the*



*impertinence to rebel, he said to a general: "Since the dead have come to life, I command you to strike their heads from their bodies." But Herat was to rise again, becoming a great center of Persian culture in the 15th century. Now it languishes in Afghanistan's endless civil war.*

*Genghis Khan*

shadow of its mighty citadel, first built by Alexander the Great in 330 B.C.

I returned to Herat thanks to the United Nations, which provides food and other assistance to Afghanistan, torn asunder by the civil war that began in 1978 and continuing conflict between groups of *mujahidin*, or freedom fighters. More than a million Afghans are believed to have died. Twice a week a small UN plane takes off from Islamabad, Pakistan, to supply the Herat mission. Crossing Afghanistan, the pilot flew at 21,000 feet, high enough, I prayed, to avoid a missile fired by some trigger-happy *mujahid*.

It cheered me to find that in Herat's bazaar metal workers still banged iron and brass into pots and urns. That's the Herat I remember. But many houses had been reduced to rubble, and outside the city I saw human skulls. Mass graves there have been roofed with glass for public viewing. The Heratis say these are some of the 25,000 people massacred by the communists after a protest demonstration in 1979.

"The communists were like Genghis," a teacher said. "They killed and destroyed." The Mongols reached Herat in 1221 and at first spared the city. But after the army left, the city rose against the small garrison that remained. The army then returned, with predictable consequences.



*P* rayer boards in hand, Taoist priests at the White Cloud Temple in Beijing belong to the same sect whose second great patriarch, Changchun, was summoned by Genghis Khan in 1222. Concerned with his own mortality, Genghis was looking for secrets to preserve his life and his



ILLUSTRATION FROM INDIAN MANUSCRIPT CA 1600. INDIA OFFICE LIBRARY, BRITISH LIBRARY





*empire. "If neither heaven nor earth can achieve permanence, how much less can man do so?" said the Taoist sage. When Genghis died in 1227, everyone encountered along his funeral procession was put to the sword to keep his burial place a secret.*

*When I said, "Reach there!" You crushed the stones to be there.*

—GENGHIS LAUDING HIS GENERALS, FROM *SECRET HISTORY*

**O**F ALL THE ENEMIES that Genghis faced, only Jalal ad-Din won his admiration. While Jalal's father, Shah Muhammad, fled ignominiously, Jalal rode south into Afghanistan and gathered troops.

Genghis sent one of his lieutenants after him. Suddenly Jalal turned and dealt his pursuers a stinging defeat. Now the great khan took charge, pinning the Khwarizm heir against the Indus River in what is now Pakistan. Jalal led charge after fearless charge. Unable to break the Mongol grasp, he at last leaped into the river and swam away. Genghis forbade his archers to shoot. "Such a son," he exclaimed, "must a father have!"

As for Muhammad, Jebe and another Mongol general, Subedei, chased him through Iran to the Caspian Sea, where, exhausted, he died of pleurisy. All the finery of his rule had been lost; he was buried in the rags of a servant.

The Mongols always benefited from superior generalship. Commanders were audacious, knowing they could depend on their well-disciplined troops. Among those entrusted with command were Genghis's sons Jochi, Chaghatai, Ogodei, and Tolui, all born to his first wife, Borte. But the most important leaders were Genghis's comrades from the tribal wars, and among these Jebe and Subedei were peerless.

Reaching the Caspian, this intrepid pair wondered what lay beyond. Europe was as unknown to them as Mongolia to Europeans. With 20,000 men, they embarked on a reconnaissance in force. They vanquished two armies in Georgia and, crossing the Caucasus Mountains in winter, defeated a coalition of Turkic tribes on the Russian steppe. As they plundered the countryside, alarm spread through the Russian principalities—not yet united—of Kiev, Chernigov, Galicia, Rostov, and Suzdal. The princes assembled an army of 80,000 that challenged the Mongols on the Kalka River in 1223.

Mongol archers rode before the enemy, filling the air with arrows. Some of the princes charged hastily, only to see the archers vanish into smoke as the Mongols lit fires of dung and naphtha. They blundered on to discover that the smoke hid not lightly armored archers but cavalrymen brandishing lance and sword and mace. Parts of the Russian force turned in confusion, colliding with other units, and then a rout began.

In the flush of victory Jebe and Subedei dined atop a large wooden box. Inside it three captured Russian princes were suffocating, a means of death apparently chosen because in Mongol tradition the blood of a respected warrior should not be spilled on the ground in execution. It is doubtful that the princes appreciated the courtesy.

Jebe and Subedei swept east to the Volga, fought two more battles, and finally rejoined Genghis on the Central Asian steppe. Living off the land, acquiring fresh horses by conquest, vanquishing every opposing army, they rode 8,000 miles, circling the Caspian in one of the greatest cavalry exploits of all time.

Behind, they left a populace fearful and confused. "Unknown tribes came, whom no one exactly knows . . . nor whence they came out, nor what their language is, nor of what race they are," wrote a monk in the principality of Novgorod. To their sorrow, the Russians would soon learn all.

Turning for home at last, the Mongols extracted incalculable wealth



from Central Asia. Warriors blazed with gold chains and jewels, and their horses were laden with bolts of silk and bags of coins. Several of the ravaged cities never recovered their former glory. Some historians say that the Mongol depredations strangled development for centuries.

**G**ENGHIS HAD NOT FORGOTTEN that the ruler of Xi Xia had refused to supply troops for the western Asia campaign. Moreover, while Genghis was away fighting, Xi Xia had tried to wriggle free of Mongol control. In 1226 the khan led his army south from Mongolia once more.

I went to Yinchuan, modern site of the Xi Xia capital, on a plane from Beijing. The east China landscape, crowded with cities, every dot of land cultivated, gave way to dun-colored semidesert with scattered towns. I peered down on village roofs that were yellow. As the plane descended, I realized I was seeing corn spread out to dry.

A few buildings in Yinchuan reach a dozen floors high and are joined in that modest eminence by a soaring pagoda, the occasional smokestack, and the minarets of several mosques. Yinchuan has a large Muslim population. Chinese authorities are worried about their Muslim citizens. In

*Monument to a memory, the traditional obo, or rock shrine, at the Genghis Khan Mausoleum in Ejin Horo Qi in Inner Mongolia is one of several memorials to a man whose grave has yet to be found.*

*One legend says that Genghis was buried here in this Chinese region.*



home to more ethnic Mongols than the northern homeland. But most scholars believe he was interred in Mongolia.

Mongols of north China celebrate unity with their kin through the figure of the great khan.

the Xinjiang region, west of Yinchuan, Uygurs chafing under the dominance of Han, or ethnic Chinese, officials, attacked soldiers and bombed railways this year.

I heard nothing of unrest among the Muslims of Yinchuan, who are called Hui. But Islam is clearly gaining strength; at one mosque I visited, an Islamic school had recently opened. With pride a teacher told me that the students were learning Arabic, the language of the Koran.

Xi Xia was long referred to as the "mysterious kingdom." In the past hundred years research has revealed that it had its own written language and produced fine silk scrolls and statuary.

Several versions exist of Genghis's second Xi Xia campaign. I heard one of these from Zhong Kan, emeritus director of the Yinchuan museum. A diminutive whirlwind, he flung his arms for emphasis while speaking, puffing cigarettes all the while.

We were walking on the bank of a wide canal running from the Yellow River, and with a windmill gesture toward the swiftly flowing water, he said, "It is very old. It was here before Genghis's time.

"And there" — he swung his arms away — "was the city wall. Just 500 yards away. When the Mongols could not get in the city, they came here" — the arms brought me back to the canal — "and broke the dike." Zhong believes the flood undermined the wall, or threatened to, and compelled Xi Xia to surrender.

It may have been the Yellow River, not the canal, that the Mongols unleashed, although that seems unlikely to Zhong Kan: The river is 28 miles from the city. Or perhaps Xi Xia surrendered after its army was defeated in fierce battles outside the walls.

Whatever happened, Genghis Khan was dying.

The *Secret History* says that as the Xi Xia campaign began, Genghis went hunting for wild asses. When his mount shied, he fell, "his body being in great pain." Another account says Genghis was ill — perhaps with typhus.

He already had chosen his successor, Ogodei, third son by his first wife. Juvaini says Genghis considered Ogodei wise and valorous; he was also a lover of strong drink and good times.

From his deathbed Genghis ordered the extermination of the Xi Xia people. His army is said to have killed "mothers and fathers down to the offspring of their offspring." Some were merely enslaved instead; still, the destruction of kingdom and people was wholesale, which is why Xi Xia lapsed into a historical blur.

In August 1227, somewhere south of Yinchuan, Genghis died. He was probably 60. Accounts say his body was borne to Mongolia for burial near a mountain called Burkhan Khaldun. Forty "moonlike virgins" and 40 horses were killed and buried with him, as if for his pleasure in the next world. To discourage grave robbers, a thousand horsemen are said to have trampled the site until it could not be found. It eludes searchers still.

Genghis was, wrote one of the Persian historians, "possessed of great energy, discernment, genius, and understanding, awe-inspiring, a butcher, just, resolute, an overthrower of enemies, intrepid, sanguinary, and cruel." A more comprehensive epitaph could not be written, except to add that he bequeathed to his clan a unified Mongolia and the most powerful army in the world.

His sons and grandsons would send that army surging anew into Russia and China, and even farther, while Mongolia creased the firmament of nations like a shooting star. Awash in power and wealth, the Mongols would find they had only one dangerous foe: one another. □





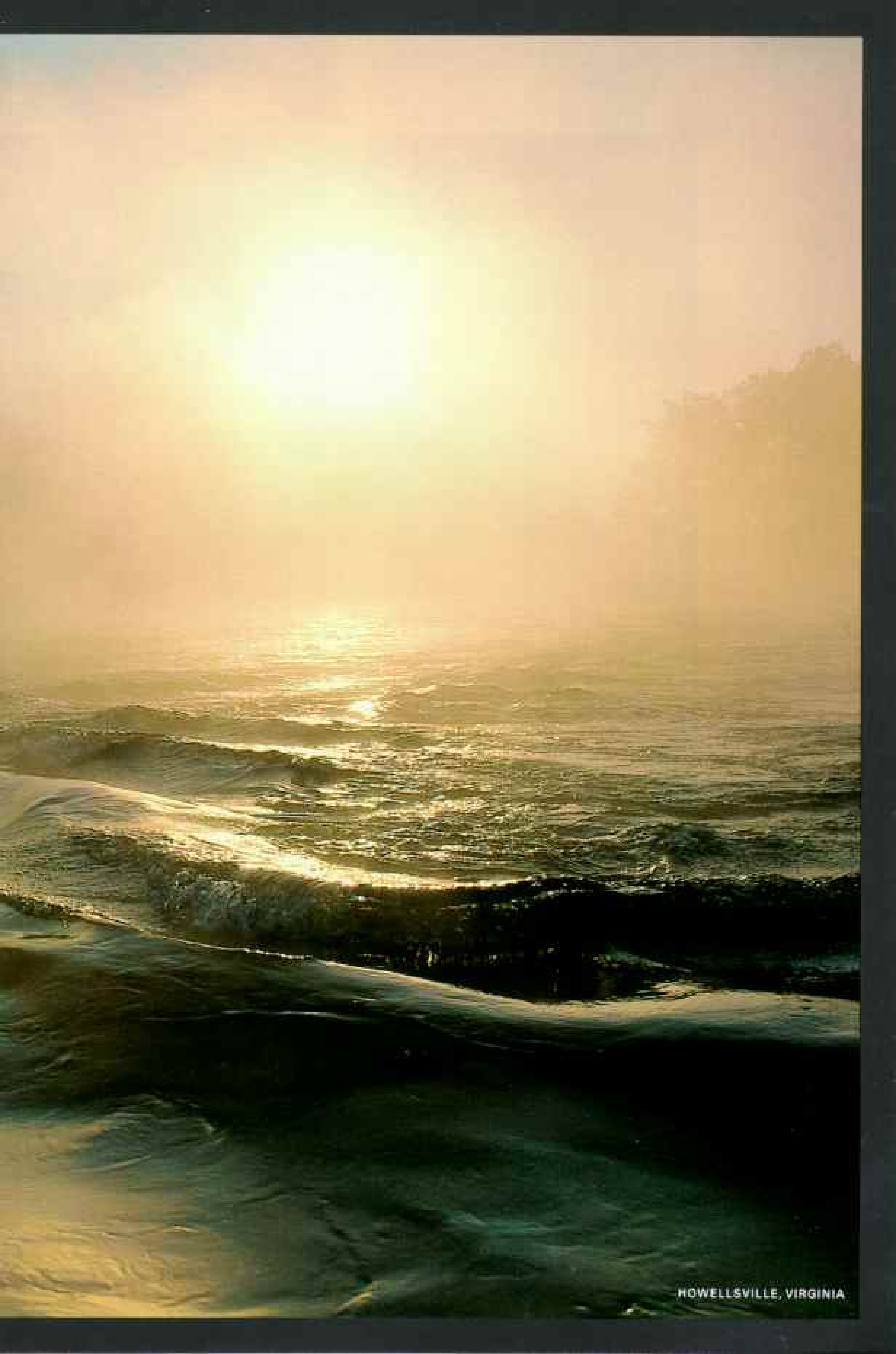
## SPECIAL PLACES

*Gilded by spring sunrise, the Shenandoah ripples and rolls gently into the misty light. There is muscular exuberance in its rapids, danger in its floods. But on most days the river welcomes even novice explorers with lyric grace. Virginia naturalist Henry Heatwole called this a land of "small and subtle pleasures," best appreciated close-up, at the river's pace.*

# Simple Gifts of the Shenandoah

By ANGUS PHILLIPS

*Photographs by* VINCENT J. MUSI



HOWELLSVILLE, VIRGINIA



*Carrying bits of fall's color, the North Fork sparkles over the aquatic grasses carpeting its streambed. Following pages: Massanutten Mountain matches curves with the South Fork, watching over Page Valley and the Blue Ridge rising in the east. Far from the cataclysmic landscapes of the American West, here ridge and river find accommodation, folding around each other, ancient comrades settled comfortably with time.*





NORTH FORK, STRASBURG







# T

O APPRECIATE the Shenandoah River you must get wet. Fortunately in most places it is broad, slow, and shallow with a firm rock bottom. You find a riffle, park the boat, step out, and lose yourself in a timeless, carefree world.

Today, two decades after my first soggy visit, that's still how I like the Shenandoah best—with a summer current tickling my waist, green mountains looming, a ledge of limestone underfoot, fly rod in hand, a pair of wood ducks or a Canada goose paddling along the tangled bank, and smallmouth bass leaping at clouds of bugs in the sunlight.

I came to the valley town of Woodstock along the west flank of Massanutten Mountain back then to meet the great, historic river I'd sung about all my life. "O Shenandoah, I long to hear you," I found myself warbling as the old Dodge rattled south down U.S. Route 11 on a valley trail Indians, pioneers, and Civil War soldiers had tramped since the first humans set foot there 11,000 years ago. My destination: a modest cabin overlooking the river's North Fork.

It belonged to Gerald Almy, a young refugee from the Washington suburbs who had driven west with his father to fish one day and fallen in love. "We bought a plot of land, had a shell put up, and finished the interior ourselves," Almy said.

He settled in to live alone on a bluff overlooking the river and soon was a budding magazine writer, traveling the globe on assignment. "If you could live anywhere in the world," I remember asking early in our friendship, "where would it be?"

"Right here," he said emphatically. And here in the Shenandoah Valley he remains. That first day he showed me why.

We loaded his flat-bottom metal rowboat on the car and drove a half mile to a put-in at Burnshire Bridge. I had no clue what to expect. "River" to me meant the Mississippi or Ohio, Hudson or St. Lawrence—some wide, murky, fast, forbidding highway for ships, and the world-famous Shenandoah seemed likely to fit the mold. So what was this weedy, quiet creek in the woods, and what was Almy up to at the first set of shallows when he tied the bow line off to his belt loop and stepped out in midstream, bidding me do the same?

His "river" was hip deep, bath warm, crystal clear, and just 30 or 40 yards wide, soothing both to eye and overheated body. I watched him cast a dab of black feathers into the tail of a bubbling riffle and let it sweep and sink to the rocks below. Soon the fly line jerked and the surface erupted in spray. He was fast to a smallmouth bass ten inches long that leaped and fought like fury till brought to hand and released.

At the time I had never cast a fly. By supper, when we fetched up at the cabin after drifting the sun-splashed waters all afternoon,

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ANGUS PHILLIPS is the Outdoor Editor of the *Washington Post*, where he has worked for 22 years. Photographer VINCE MUST lives in Washington, D.C. Each is making his first appearance in the magazine.





SOUTH FORK, LURAY

*Winter's pale sunrise tints Strickler Knob, jutting from fog-wrapped Massanutten. Below stands the White House, built around 1760 by German settlers who traveled the Valley Pike from central Pennsylvania. Like the Scotch-Irish and English who came with and after them, these pioneers built massive walls and washed them thickly with quicklime and sand, fending off harsh weather and other enemies more sharply armed.*

I was a fly fisherman. "How many did we get?" I asked. "Over a hundred," he said. I'd landed a third of those on my very first trip and have gone back year after year and done the same or better, so little about this remarkable river has changed.

SO WENT MY FIRST LESSON in the rich accessibility of the Shenandoah, which still seems its finest feature. Anyone can tackle it and come away glad for the experience—by canoe, by inner tube, by foot, by fly rod, from the swinging bridge at Narrow Passage, from the mountaintops, even from the window of a vehicle speeding down the valley's heart on Interstate 81, with the Alleghenies on one side, the Blue Ridge on the other, and pastures of emerald green at either hand.

Shenandoah, an Indian word believed to mean "daughter of the stars," refers in one way or another to all these things: To the 25-mile-wide valley, which stretches 150 miles from the Shenandoah's spring-fed headwaters below Staunton to its confluence with the Potomac at Harpers Ferry, West Virginia; to the rivers themselves, the North Fork and South Fork, twin winding ribbons that loop and bend through rich farmland and woods on either side of the 45-mile-long Massanutten Mountain before converging at Front Royal and rolling north as one; and to the ancient Blue Ridge, the valley's eastern boundary, much of which is encompassed by the popular ridgetop Shenandoah National Park, through which meanders a particularly scenic section of the 2,159-mile-long Appalachian Trail.

The twin rivers flow north along nourishing limestone beds hundreds of millions of years old. To many Americans steeped in traditions of the nation's great waterways, north is the wrong way for a river to flow, of course, which leads to geographic confusion. Locals chuckle when they hear songwriter John Denver's refrain: "Almost Heaven, West Virginia; Blue Ridge Mountains, Shenandoah River," since the Blue Ridge isn't in West Virginia at all, and only a short, 20-mile portion of the river runs through that state.

They get a bigger chuckle when someone trots out a bluegrass song whose chorus goes: "Deep in the heart of the Shenandoah Valley, the Shenandoah River flows quiet and serene; on to the James, then at Norfolk, Virginia, she floats all her secrets out into the sea." Nicely put—but the Shenandoah runs precisely the other way.

Perhaps ignorance is bliss. If you polled modern Washingtonians, who live just 70 miles east of the Shenandoah Valley, you probably wouldn't find one in ten who knows that a good portion of the water flowing by their doorstep originated in the Shenandoah, the Potomac's largest feeder. But Washingtonians know a good thing when they see it and stream by the thousands to the Shenandoah in summer for relief, respite, rejuvenation.

It's odd. The Potomac just upstream of the nation's capital is one of the finest urban wilderness rivers in the world, beloved by serious hikers, birders, anglers, wildflower enthusiasts, canoeists, and kayakers. But for many the Potomac is just too wild with its brawling rapids, boulder-strewn banks too steep in places to scale without ropes, and long portages to put-ins.

The Shenandoah, by contrast, fairly

*(Continued on page 54)*

*Bound by mountains a quarter of a billion years old, the river's meandering forks drop sharply from highland headwaters, flowing northward to their confluence at Front Royal. From there a single channel continues for 60 miles to meet the Potomac. Beginning and ending above the fall line, the river never meets the sea.*





*Shenandoah outfitters advise paddlers to plan on two miles of river travel for every mile on land, but along the Seven Bends of the North Fork (below) that estimate seems woefully inadequate. Record snowmelt pushed the river over its banks in January 1996, a deluge repeated in September by tropical storm Fran.*











*Local wisdom says that spring climbs the mountains a hundred feet a day. By the time fresh green washes the ridgetops, lush leaves (previous pages) already shade the brimful river, and morning mists rise with near summer laziness. Austere branches (above) cast off the gaudier hues of autumn, left with only water droplets for adornment. An early snow squall (following pages) mutes the valley with a sudden brush of winter white.*



MASSANUTTEN MOUNTAIN







(Continued from page 46)

beckons with its grassy banks and a steady procession of wading-depth riffles and pools. Jack Lorenz, former executive director of the Izaak Walton League of America, used to ply the river in a canoe but grew weary of lugging all that weight. Now he fishes from an old lawn chair balanced on a truck tire tube, lacking only a servant to fan him as he drifts the North Fork. "My friends call me the piscatorial potentate," he laughs.

For those who own neither boat nor tube, a half dozen outfitters operate on the South Fork between Luray and Karo Landing, where the river sweeps through 30 miles of bass-rich waters, looping along in bends so gentle you hardly notice that the mountainside you faced one moment is at your back the next.

"Between all the outfitters, we can put more than 500 canoes on this stretch on a busy weekend day," said Trace Noel, who runs River Rental Outfitters, "and that's not including tubes and private boats." If it sounds like a mob scene, so it is on hot summer weekends. But a canoe is a simple contraption that leaves no trace when it's gone, and the Shenandoah rolls on, week after week, millennium after millennium.

What makes it so productive? Larry Mohn, Virginia's fisheries biologist for the Shenandoah, says the river's origins in limestone springs help keep it mineral-rich and nonacidic despite growing problems of acid rain. Its underground origins also keep it flowing, even in drought, and the limestone supports tremendous bug life. The richly contoured rocky bottom provides habitat for crayfish and minnows and the bass, catfish, and sunfish that prey on them.

WHERE DOES IT ALL BEGIN? I took a walk high in the mountains to the source of the North Fork one cold spring day with Garland Hudgins, 83, a founder of Friends of the North Fork and an advocate of the Shenandoah for a half century. A native of Tidewater Virginia, he got hooked on the valley in the 1930s when he worked in an Appalachian timber camp for the Civilian Conservation Corps. On his return from the South Pacific after World War II, having seen a great chunk of the world, "There were only two places I cared to live—the Shenandoah or the Hawaiian Islands," he said. He couldn't afford the latter, so he seized on the former.

Hudgins was attracted to the same clear water and peaceful vistas that enticed pioneers 250 years ago, when German immigrant farmers came down from central Pennsylvania, drawn to the broad valley with grass so tall that, it was said, in high summer you could tie it across the saddle of a horse. Today you still see the legacy of those early settlers in the pin-neat farmhouses and church spires dotting the valley.

But progress brought problems. Friends of the North Fork and its sister group, Friends of the Shenandoah, which monitors the larger South Fork, were formed in response to two chemical affronts that forced river health advisories that remain in effect in some stretches.

First, in the 1970s, workers at the DuPont nylon factory in Waynesboro, along the headwaters of the South Fork, unearthed pools of mercury dumped during manufacturing processes there decades before, which had leached into the streambed and food

*Aluminum canoes rest amid summer grass and stalks of dame's rocket, ready to slip down the bank and return to their native element. According to Shenandoah outfitter Trace Noel, when a business's greatest asset is natural beauty, "you have to teach people how to love the river, not just how to use it." Working with residents and local governments, outfitters have helped establish guidelines to protect the peace and solitude that give the river much of its character.*



NORTH FORK, WOODSTOCK

chain, rendering fish dangerous to eat in quantity. Then Avtex Fibers, a since closed rayon factory in Front Royal, was found to have dumped carcinogenic polychlorinated biphenyls (PCBs), making fish in the main stem unfit for consumption, as they remain.

Out of the bad news came the good—establishment of two volunteer citizen oversight panels that monitor water quality at more than a hundred sites. Chemical excesses have been stopped, said Hudgins, to the point that stocked trout thrive just downstream of the DuPont plant. Now the Friends are working to curtail what they see as the remaining serious threat to the river's health—agriculture.

The Shenandoah Valley has been Virginia's breadbasket since before the Civil War. Millions of chickens and turkeys are produced yearly in poultry houses; apple orchards stretch to hilly horizons; cornfields abound in the valley; and beef and dairy cattle roam the pastures, tramping down stream banks and sending plumes of mud into the river after rains. Silt and effluent from livestock and poultry threaten to overwhelm some creeks and over-enrich and cloud the rivers, fostering oxygen-depleting algal blooms.

But none of that is evident 3,400 feet high on Shenandoah Mountain, where Hudgins and I braved a bitter April northwester to see the place where the North Fork begins. At a ridgetop clearing he pointed west into the Alleghenies, where nary a hint of man's





NORTH FORK, NEW MARKET BATTLEFIELD STATE HISTORICAL PARK

*The waters of forgetfulness do not flow in this valley, where even the sky seems to remember the storm of civil war that blew up and down the Shenandoah. Each May historical reenactors join Virginia Military Institute cadets on New Market battlefield (above). They honor valor, Union and Confederate alike. Reminded of old struggles, we remember to treasure peace: flowing through the land, gentle as the river.*



presence clouded the view. "That's almost a wilderness, isn't it?" he asked rhetorically.

We clambered down a still snowy trail to an unassuming landmark, whose authenticity he's had verified by the U.S. Forest Service, and when it hove into view, a humble steel pipe from a leaf-cluttered puddle pouring at bathtub-filling velocity, a tear blossomed in Hudgins's eye. "There," he said, "lies the first spring of the North Fork of the Shenandoah River, and every time I come here I thank the Lord for the opportunity to see it one more time."

We raised a cup of sweet limestone water to toast the river, then set off back down the rocky forest road in his Jeep, startling a ruffed grouse from the roadside. Down and down we went, past tumbling mountain creeks to the valley floor and the gentle slope of the Shenandoah, then 60 miles farther to where the twin forks of the ageless river converge and rumble on to the Potomac.

There I took my leave to avenge an old grievance. Early in my writing career a favorite editor had asked me to take him on a canoeing adventure. For reasons that defy explanation I chose the lower stretch of the Shenandoah at West Virginia, the only place where the usually placid river wields a fist. At Bull Falls above Harpers Ferry, it roars across a five-foot-high, river-wide rock ledge that's a challenge to even expert canoeists.

I teamed the editor with an experienced paddler, and they made it through the crashing rapids smoothly. But when my wife and I approached, we wound up schussing toward the white water sideways. Over and out of the boat we rolled just upstream of the ledge, the swamped canoe rushing on into a narrow gap. Its ends wedged between two boulders and in an instant it snapped in half with a rending crack before my boss's horrified eyes. We had to patch it with duct tape to haul it home.

I have yearned since to run that rapids successfully. Now seemed the time. I enlisted John Gibson, a canoeing outfitter with 20 years experience, to paddle bow. He found an expert on Bull Falls, kayak instructor Mike Dudash, to lead us.

We scouted the falls and picked the chute we intended to run, which looked formidable in the spring runoff, but manageable. Dudash went first, sliding through easily in his kayak, then from below gestured to the spot where he wanted us to enter the chute.

"I have no intention of swimming here," said Gibson as we set off in the bright spring chill. And it looked as if he'd realize his wish until a great, frothy standing wave smacked the canoe side-on in the middle of our plunge and tipped the bow at a crazy angle. The last thing I saw was Gibson's head wobbling, then his body flying over the side into the white water. I was right behind.

"Swim for that eddy!" Dudash shouted when our heads popped up. I found firm footing after a couple of dozen strokes. The boat and Gibson were swept downstream, where Dudash retrieved them.

Chilled but safe, I found myself in a familiar place—alone, hip deep in the rushing Shenandoah. I gazed up at the mountains, at the cloud-studded sky, at the stream-bred bugs swarming, at the pale green promise of another summer, and did the only thing I know to do in that situation: I smiled. □

# BELIEVING LAS VEGAS

*The world's fourth largest pyramid flanks the nation's ninth busiest airport in America's fastest growing metro area. From triple-digit temperatures to snowy mountain ski runs, Las Vegas thrives on extremes. For a million-plus residents, it's a bumpy, thrilling ride.*







*All hail Caesars, the casino that changed the face of the Las Vegas Strip in 1967. With its full-of-the-Roman-Empire motif, Caesars Palace created an aura of giddy decadence that inspires theme-oriented gambling to this day. Not to be outdazzled by its new neighbors, Caesars in 1992*



*opened the Forum Shops (above), a chic mall with a Roman market theme and a daily royal procession led by a centurion. But retailing is not what Caesars is about: While moving sidewalks whisk shoppers from the street into the mall, the only way to walk out is through the casino.*



By WILLIAM R. NEWCOTT

NATIONAL GEOGRAPHIC EDITORIAL STAFF

Photographs by MARIA STENZEL

"THIS IS A NICE LITTLE PLACE," said the host, sliding a keycard into the hotel suite door.

Hey, I told myself. This is Las Vegas. I'm ready for anything. I was not.

We stood in the living room of Villa Verona, a 15,400-square-foot palazzo perched atop the Las Vegas Hilton. Gilded domes, frescoed with sweeping clouds and hanging gardens, framed chandeliers of 24-karat gold and crystal. Their opulence was reflected in the marble floors, polished to mirror perfection. A broad arch opened to a garden with private pool. Goldfish cruised lazily in a rock-rimmed pond. In one of the two bedrooms, painted cherubs smiled down on a massive raised bed and a 60-channel projection TV screen dropped from the ceiling. Hanging in the bathrooms of Italian marble and French onyx were Egyptian-cotton towels, robes, and slippers.

"Let's see," muttered Gary Gregg, the hotel president, "there's a control for the drapes around here somewhere."

A gentle whir, and red satin draperies parted. Squinting into the harsh desert light, my eyes rose past thousands of new homes to the snowcapped mountains that surround Las Vegas Valley.

Three miles to the north were the tall hotels of downtown Las Vegas, where at night Fremont Street erupts into a strobing flash of neon. This is the home of the Golden Nugget, Binion's Horseshoe, and Vegas Vic, the 60-foot-high neon cowboy.

To the south lay the Strip—officially Las Vegas Boulevard—where neighboring casinos take keeping up with the Joneses to nuclear-arms-race extremes. Gleaming green in the sunlight was the massive glass-and-girder block of the MGM Grand Hotel, at 5,005 rooms the second largest hotel in the known universe, a mere 195 rooms behind Thailand's Ambassador City Jomtien. In fact, 11 of the world's 12 largest hotels were within eyesight.

"I'll take it," I told my host. "How much?"

Gregg smiled. "I couldn't rent you this place," he said. "It's a complimentary accommodation for our very special visitors." Translation: If you're one of the handful of people who have the wherewithal and inclination to drop a few million dollars at the Hilton's baccarat table, you can use this penthouse.

The Hilton spent 40 million dollars to build this and two adjacent villas. Across town, Caesars Palace recently laid down millions for its own pair of penthouse suites.

"And as lavish as this suite is," Gregg observed, "as we speak, there's someone, somewhere, bent over a set of blueprints trying to create something even more extravagant."

Some would call it excess or one-upmanship. But wandering the casinos and neighborhoods of Las Vegas, I began to see that the quest for the Next Big Thing is shared by virtually everyone here,

MARIA STENZEL's photographs illustrated stories on Antarctica and Canadian explorer David Thompson in the May 1996 issue.



*Theme song of Vegas, the slot machine's mantra floats from hotel to grocery store, from laundry to restaurant. At a supermarket retiree Frank Lander invests in hopes of a jackpot. The city faces a challenge from locals who gamble regularly, says Mayor Jan Laverly Jones: "Gaming is good for Las Vegas, but when money goes down a slot machine rather than for food, then gaming is feeding on the community." Initially wary, Vegas casinos are cooperating with a congressional study on the effects of gambling.*



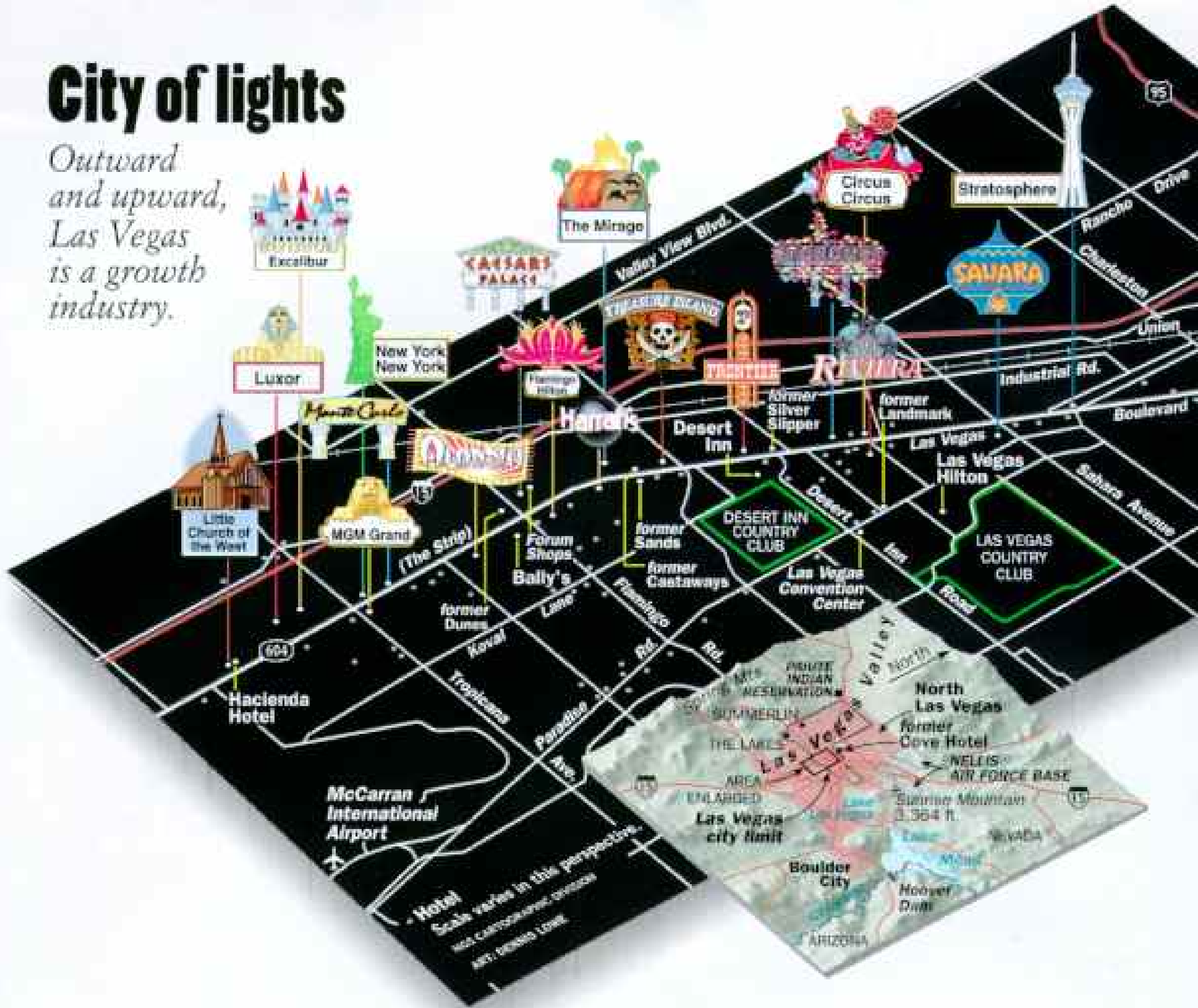
from the casino owners to the politicians and small businessmen, even to the churches. As people, industry, and investment dollars pour into the valley, the chips are piling up on the table.

Without a doubt casinos pay the bills in Las Vegas and always will: Thirty percent of all jobs are in hotels, gaming, and recreation, and those businesses in turn support other service and construction workers. But three technology parks are in development. Out-of-state insurance and finance companies are moving in. Traffic jams, once endured only by rubberneckers along the Strip, now flare up at six-lane intersections miles from downtown. Where desert tortoises were once the chief commuters, drivers crawl to and from ever expanding housing developments that spread like an inkblot across the desert floor.

**“**I'M WORKING THAT MACHINE, HONEY!” barked a pantsuited New Yorker with a freshly dyed head of fire-engine-red hair. I was settling down at a Caesars Palace slot machine a good five stations away from where she was methodically pushing the spin button on a Jungle Fever slot machine. I didn't argue. I'd seen this before. Like generals marshaling their troops, slot players commandeer entire banks of machines. They play mesmerized as

# City of lights

*Outward and upward, Las Vegas is a growth industry.*

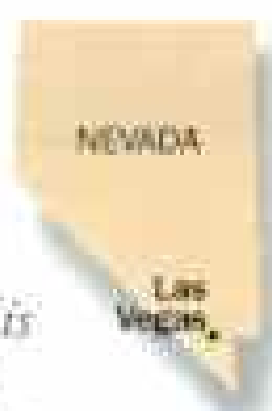






*"Ours was the first and will doubtless be the last party of whites to visit this profitless locale," wrote U.S. Army Lt. Joseph Ives, describing the Colorado River near Las Vegas in 1857. His words remained largely true until the Union Pacific Railroad steamed through in 1905. By 1910, 945 residents clustered near Fremont Street. In 1930, the year before gambling arrived and construction on Hoover Dam began, there were 5,165. Cars and planes made Vegas accessible to everyone. Now 11 of the world's 12 largest hotels are on or near the Strip (left).*

*The oldest casino in town, El Cortez, still has some of its 1941 adobe structure. But new is better in Vegas: The Flamingo tore down founder and mobster Bugsy Siegel's private suite for a wedding chapel, and despite a place on the National Register of Historic Places, the Little Church of the West has twice been moved for hotel construction.*



above their heads the jackpot total compounds by the second on an electronic display, the numbers whizzing by like an odometer on the space shuttle.

It seems all Vegas casinos are a variation on a theme: card and dice tables in the middle, roulette near the periphery, a solitary wheel of fortune near the entrance, and everywhere else, row upon row of blinking, bonging slot machines. The lights are low, the drinks are free. Off to the side, often in walled-off parlors, the truly high rollers indulge in baccarat, a card game I still don't understand despite the best efforts of several tutors, all of whom kept insisting, "It's so easy."

If the Strip is a slick theme park, downtown is a raucous carnival, the gaming tables nearly piled atop one another or spilling out to the sidewalk where hawkers stop just short of dragging patrons in by the ears. But on the Strip a curious claustrophobic spaciousness is the rule. In hangar-size gaming halls the hotels not only position tables and slot machines between the front door and the restaurants, elevators, pool, and anywhere else guests might want to go but also configure them like mazes, doubling and tripling the distance traveled by the unwary.

Standing at his post overlooking the Desert Inn casino, manager J. R. Rose is a study in ovals: a great balding round head, a prominent girth grudgingly held at bay by wide suspenders. Ear pressed to a phone, fingers riffling a notebook, he monitors guests' credit, bestows sought-after casino "comps" of free room and meals, and generally makes himself a presence that ensures an orderly transfer of funds from losers to winners. This corner of the casino has been J. R.'s for 18 years.

"I was born with a deck of cards, played solitaire when I was four," says J. R.

At one table a losing player catches J. R.'s eye. "You can always tell a person's in trouble," he says. "Slowly shaking the head, closing the eyes, like they're saying 'What'll I do? What'll I do?' I've had 'em tell me, 'I'm gonna go out and kill myself.' And that's when I say, 'Let's go out back and talk.'"

It's then that J. R. Rose pulls from his pocket a spiral-bound New Testament.

"I tell them, 'The Lord sent you over here for a reason. That's only money.' I invite them to the church where I'm an usher—one fellow even stayed in town an extra day just to come by."

The next Sunday I too dropped by Liberty Baptist Church. It sits near the highway just outside the sprawling 22,500-acre community of Summerlin, where tiled roofs stretch like a great kitchen floor from Highway 95 to the mountains four miles distant. At the church door was J. R., greeting the faithful as earnestly as he presides over his charges at the Desert Inn.

"They nicknamed me the Poker Man Preacher," he told me. "It's true I work in gambling, but it's a nine to five job. I don't force anybody to make a bet. I do know that when the Lord tells me he wants me out, I'm ready to go."

Liberty Baptist is one of some 500 churches in Las Vegas, many of them springing up in strip malls, office parks, and private homes. Denominations abound, but virtually every neighborhood in the valley has a Mormon chapel. Oddly, in Sin City the most emphatic religious presence is that of the nongambling, teetotaling



Mormons, whose integrity and industriousness are greatly valued by the hotels.

"This town needs its churches," observed J. R. "Vegas can be a very cruel town. I've seen so many marriages break up because the man can't stay away from gaming. And, of course, prostitution's legal up in Pahrump, 90 miles from town. You've always got Satan pulling your chain someplace, but Vegas seems to have a lot more chains for him to get ahold of."

**S**OME PEOPLE COMPLAIN about the reach of development in Las Vegas Valley, but the place came pretty much paved to begin with. A concrete-like crust of caliche—the sun-dried lake bed of an earlier, wetter era—crops up from foothill to foothill. That's about all the early rovers found in the valley when they pushed the Old Spanish Trail from the Great Salt Lake to California in the early 1800s. They also found Paiute Indians living along an artesian oasis of tall grasses, mesquite, and cottonwoods. So they named the place Las Vegas—"the meadows." Mormons made an abortive effort to colonize the site in 1855, gave up three years later, but returned with the railroad in 1905. Nearby Hoover Dam brought the next boom as some 5,000 workers filled hotels, bars, and casinos—legalized by the state just in time, in 1931. They stayed to work at nearby military installations during World War II.

There was already one fancy hotel out on the Strip when Bugsy Siegel, the New York mobster, built his plush Flamingo Hotel

*Lying in the lap of luxury, high rollers pay for their "free" rooms with staggering casino drops. The Hilton's Villa Verona (above) and two similar suites cost 40 million dollars to build; VIP losses paid the tab.*

*Spenders big and small provide jobs for the 30 percent of Vegas workers who are in the hotel and gambling industry. Mel Evans came to town in a juggling act; now he balances more than a dozen suitcases a trip during the Treasure Island resort checkout rush (above right). Big tips undeniably earn better service, "But you gotta treat everyone like a prince," advises Joey Ciadalla, a bellman at Caesars for nearly 30 years. "When people come here, I tell them, 'Welcome home!'"*



there in 1946. Bugsy got rubbed out by his business partners the following year. Within a decade a dizzying number of casino hotels had sprung up on the Strip and downtown, virtually all of them with underworld ties.

That's the way things stayed until early one morning in November 1966, when a train made an unscheduled stop along Industrial Road, a block west of the Strip. An ambulance hastily loaded a passenger from the train, then sped to the Desert Inn. A draped gurney was rolled through the lobby and into an elevator.

"The doors slid closed, and that was the last any of us saw of Howard Hughes," recalled Harry Williams, the Desert Inn's former vice president, who was the manager on duty that morning. The billionaire snapped up the Desert Inn for 13.2 million dollars, then went on a casino shopping spree that gave Hughes the Sands, the Frontier, the Castaways, the Silver Slipper, and the Landmark. Following Hughes's lead, MGM, Hilton, and Holiday Inn quickly became casino owners too. The mob wasn't run out of Las Vegas; Howard Hughes bought it out.

"Hughes stayed nine years to the day," Williams said. "Ducked out through a fire exit and caught a plane to the Bahamas from Nellis Air Force Base. After he left, I entered his suite, went to open the drapes, and they came crashing down on me. They were all dry-rotted. In nine years, they'd never been opened."

For every 100,000 people who come to Las Vegas to play, 250 come to stay. That adds up to 75,000 new residents a year. Despite the crush of newcomers, unemployment remains low. Home







*"Steve first suggested putting the dolphin pool in our backyard," jokes Elaine Wynn, wife of Mirage Resorts chairman Steve Wynn (left). The habitat eventually went in behind the Mirage hotel—not purely for show but with a curriculum for local schools created by a former Smithsonian naturalist. Down the street, guests at the Luxor hotel get a lesson of sorts in Egyptian history as a pharaoh's head is projected on a screen of sprayed water (above). Behind it, the turreted Excalibur's closest link to medieval lore is a nightly jousting event in the basement.*

prices are among the lowest in the West. There's no corporate or personal income tax. Retirees who can't afford Phoenix, families who can't bear the natural calamities of Los Angeles, rust beltters in search of the sun have made Las Vegas the fastest growing metro area in the U.S. The phone company has to issue a new local directory twice a year. A few years ago planners predicted that the Las Vegas Valley would be home to one million people by the year 2000. That milestone was reached in 1994. The latest prediction: two million by 2005.

"It will happen sooner than that," declared Jan Laverty Jones, mayor of Las Vegas.

Jones—a longtime executive and TV pitchwoman for a local car dealer—worries about the region's economic reliance on the business that built Las Vegas. "I believe we have a five-year window to take this area's total economic focus off gaming, or our very future is in jeopardy," she told me. "Sure, gaming is booming, but I think a bit of the bloom is coming off. We find businesses still don't think Las Vegas is a place to move a family, because people think we all live in casinos and our kids don't go to school."

One company that did make the move is Citibank, which employs 1,600 people at its credit card service center in one of the city's new planned communities. The complex is responsible for generating 25 percent of U.S. Postal Service revenue for the entire state of Nevada. Still, Citibank decided to use as a mailing address not Las Vegas but The Lakes, after a posh hilltop subdivision.

Whatever their postmarks, new corporate arrivals are making the mayor's dream of diversification a reality. Warehousing—from clothing to tires—will boom so long as Nevada has no inventory tax. Lockheed Martin has built a ten-million-dollar testing lab nearby. And Ocean Spray chose the valley—as far removed as imaginable from a cranberry bog—as the home of its new southwestern processing center.

**L**IKE A CRUISE SHIP on a sea of sand, Las Vegas blazes with a riot of lights, music, and 30 million annual visitors desperate to have the time of their lives. They fly in, they drive in, they jostle through crowded casinos for four days—up from an average of three and a half just a few years ago—in search of that statistical lightning bolt known as a jackpot.

"Vegas now has 94,000 hotel and motel rooms," said Gary Gregg of the Hilton. "It will have 25,000 more in the next year and a half. I'll bet you our occupancy rates won't drop one bit."

The big spurt of growth began in 1993 with the opening of the MGM Grand, Treasure Island, and the pyramid-shaped Luxor, with its indoor New York City skyline (King Kong hangs from a miniature Chrysler Building) and outdoor obelisk surrounded by dancing fountains.

The Luxor's fountains are actually among the less splashy water spectacles in a city that averages just four inches of annual rainfall. The Mirage is famous for the nightly explosions of its streetside water volcano, and out back school buses line up daily for tours of the hotel's expansive dolphin pool. Next door a pirate ship and British frigate do watery battle in a lagoon outside the Treasure Island resort. The *Titanic* sinks beneath 2,000 gallons of water twice a night in Bally's "Jubilee!" stage show. Four wells draw one



*Backstage bustles before curtain time at the Stardust's "Enter the Night" revue, which serves traditional helpings of sex and spectacle. But flesh is yielding to flash. The Hilton spent 12 million dollars to stage the Broadway show Starlight Express. Steve Wynn built 1,500-seat theaters for the*





*Siegfried and Roy magic show and the avant-garde circus Cirque du Soleil. Theme parks at Circus Circus and the MGM Grand give parents a place to put the kids. "Increasingly," says former MGM CEO Bob Maxey, "we're in the entertainment business, and gaming is part of the mix."*



million gallons a day to feed the grass and fill the water hazards at the Desert Inn's golf course. But the resorts recycle virtually all their "show" water.

"Places like the Mirage are exemplary in their water conservation," said Pat Mulroy, who heads the Las Vegas Valley Water District. "The single biggest use of water when the temperature soars here is people watering their lawns. And people overwater profusely. Some 64 percent of water is used by residents, and nearly half of that is wasted."

The Colorado River provides the valley's 1.1 million people with the lion's share of their water. But the treaty allocating the river's water among seven states was drawn up in the 1920s, when Vegas was a dusty crossroads. Now, 70 years after the birthday cake was sliced up, the hungriest kid has arrived at the party.

**F**RIDAY. The 8 p.m. flight from Los Angeles to Vegas. The airplane is throbbing with a full load of pilgrims. Overwhelmingly male, they shout and punch one another's arms. The cabin is dark save for overhead reading lamps that splash each traveler with an individual spotlight.

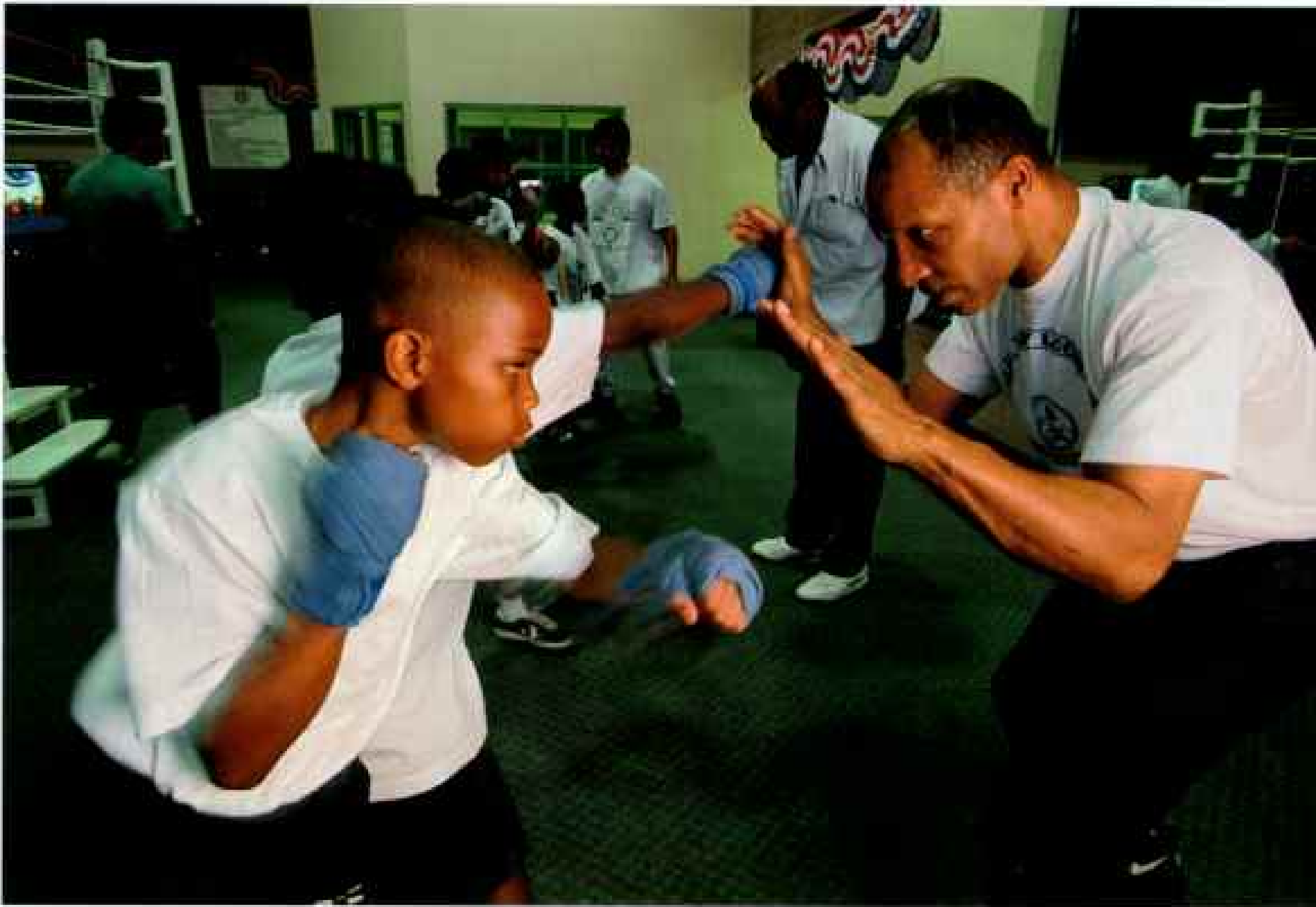
Across the aisle, in the next to last row, four men feverishly make plans for the weekend.

"We will not sleep," one says. Like his friends, he is wearing a bright blue patterned shirt, open halfway to the belt. "We will play cards, and roll craps, and find ourselves some women."

I ask a flight attendant if she makes the Friday Vegas run often.

*Down and out at Caesars Palace, heavyweight boxer Calvin Jones kisses the canvas as opponent Henry Akinwande waits in a neutral corner. More than 8,000 fans can jam the boxing arena—accessible through the casino. Outside Caesars this day, one fight fan shot and killed another, then danced around his victim's body. "Animals," sneered another fightgoer.*

*KO'ing gang warfare is the mission of pro-boxing referee Richard Steele (above right), who runs a youth program at a North Las Vegas community center. "A kid comes in here," he says, "and he's gonna stay clean or else he's out. As long as he stays, he's gonna learn about boxing, and he's gonna learn about life."*



"Oh no." She smiles. "Thank God. The airline rotates the flight crews. These people are very nice, but they're — uh — excited."

In the terminal at McCarran International Airport, some passengers fairly bound up the jetway and fling themselves at a cluster of slot machines that waits at the gate like a party of one-armed relatives. It is the slot machine that built today's Las Vegas. In the lazier forties and fifties the sound of a thriving casino was the click of a roulette wheel, the flickflickflick of a deck being dealt, the felt-muffled clatter of dice. Off to the side of the real action, waiting patiently to launch their coup d'état, were the one-armed bandits.

"They started out as something for the women to do while their husbands played in the casino," recalls Burt Cohen, former CEO of the Desert Inn. "The women didn't like the table games."

The old machines were mechanical, clunky, and expensive to maintain. Electronics made them more practical in the late 1950s, and by 1961 there were 7,100 of them clanging away in Las Vegas. The casinos jealously guard their actual take, but today, says Cohen, "We make more on our 25-cent slot machines than on craps, blackjack, and roulette put together."

Slots have helped make Steve Wynn the most powerful man in Vegas. A 1910 antique model stands in his office. But on this day, to Wynn, they were little more than a distraction. "The last thing this town needs is more slot machines," he growled. "There are 115,000 in this county alone. What we do need is the value-added feature, the thing that will bring people from all over the world to talk about this place."



Wynn was speaking specifically of the show he's going to mount in his luxurious new hotel, Bellagio. In 1993 Wynn blew up the old Dunes Hotel, which he bought for a song, and now he was fussing over drawings of the resort that will replace it.

For a guy who started out running a bingo game in Maryland and came to Las Vegas as a liquor distributor, Wynn has done OK for himself. He now owns the Golden Nugget. He opened his Mirage in 1989 and Treasure Island a few years later. A week before our meeting he'd been granted a billion-dollar line of credit for the construction of Bellagio.

"The Mirage is the finest hotel in Las Vegas," said Wynn without fear of contradiction. "But this will be the most wonderful, most exquisite, most lovely hotel anywhere."

Wynn leaned forward and passionately enumerated the features of his new creation. "The rooms are huuuuuge! A typical room in this town is 380 square feet. We're going to 510. And the bathrooms. . . ." Now he was waxing rhapsodic. He might well have been speaking of a Rembrandt—or a sunset. "The bathrooms have a separate john . . . with a door!"

Soon Wynn confessed what I already sensed. "The sickness here is that I'm not in a hurry to break ground. I love this part the best! All the magic is now, in the planning."

It is Wynn—with his volcano, pirate battles, and a spectacular magic show at the Mirage—who is generally credited with Las Vegas's blossoming image as a family resort. In the wake of his success, casino theme parks and family-oriented shows have become the rage along the Strip.

"Those guys are confused," Wynn insisted. "It was never about children; it was about putting on a show for our guests. Despite all the fanfare, Vegas visitors are still less than 11 percent kids. Thank God! This is no place for children."

Wynn's wife, Elaine, a longtime crusader for quality public education, adds, "Las Vegas is a tough place for children. It's a 24-hour town, with parents working shifts, and there's a certain permissive feeling. But there's also no more magnificent place to live. The climate is dreamy. And, as Steve says, Las Vegas is the most democratic place in America. Anyone can make it here."

Like most other American cities, Las Vegas has its share of poverty, drugs, violence, and homeless people. While the city's economy boomed in the 1980s, the poverty rate soared by 17 percent. Twelve out of every 1,000 people have been victims of violent crime. Of the nation's 75 largest counties, Clark ranks 72nd in percentage of college graduates. The rate of teenage pregnancies in Nevada is among the highest in the nation—a condition to which Las Vegas has made the major contribution.

Still, for thousands of new families the promise of Las Vegas is too good to pass up. Many wage a daily battle to separate their lives from the casinos. The result is the emergence of two Las Vegases.

"We operate totally outside the world of the casinos," said Alan Bond, father of three young children and manager of a mall east of the Strip. "We just think of them as a blob of real estate downtown that we avoid with a passion."

He and his wife, Lisa, live in Warm Springs Ranch, a development south of the airport.

"Our home is quite old—12 or 13 years," said Lisa, clearing the



*Here comes the neighborhood: A guest peeks at the desert next door during a Junior League Christmas coffee in Tournament Hills, an affluent gated community. As if in denial of its desert locale, The Lakes (right) surrounds a 30-acre body of water drawn from nearby Lake Mead and an aquifer of undrinkable water. As water consciousness has risen, new lakes have been outlawed by the county. The last, Lake Las Vegas, with ten miles of shoreline and lots starting at \$185,000, covers 320 acres. Its 18-story-high earthen dam holds back water pumped in from Lake Mead.*





table after dinner. Unhappy with what the public schools have to offer, she teaches their children at home. But she admits there's no way to shield them from the seamy side of their hometown.

"I guess the worst thing is the ads on the taxicabs," she sighed. I knew exactly what she meant: Placards for a downtown nightclub picture a busty woman with the seemingly redundant proclamation "Topless—No Cover."

"It's no thrill," said Lisa, "when your six-year-old looks out the car window and says, 'She needs a bra.'"

Still other families, alarmed at Las Vegas's explosive growth, are elbowing their way out of the valley.

"It's sad, but I just don't feel safe here anymore," said Nancy Rawlings Johnson, born and raised in Vegas. She, her physician husband, and their four-year-old son are moving to Logan, Utah. "There are too many gangs coming in from California. It's so crowded; I think a lot of people are ready to ignite at the slightest provocation. It's ironic, but I think the streets were safer when the mob ran the town."

**D**ON KING GRIPPED THE ROPES in one corner of the Caesars Palace boxing ring, his flawlessly shined shoes planted in speckled blood from the previous fight. The preacher in his pulpit.

"All I can do is just stand here and smile!" he said. "I love it! I love America!"

From his vantage point, King—flamboyant promoter of some

*Out of step with each other, Las Vegas's exploding retiree and school populations have prickly differences. Clark County, which includes Vegas, is one of the fastest growing school districts in the U.S., with some 12,000 new students a year. The marching band at Swainston Middle School, the county's largest (above right), represents a student body of 2,700. Despite more than 60 new schools since 1990, classes are still overcrowded. But senior citizens—while reveling in the social amenities of sprawling communities like Sun City (above)—are reluctant to foot the bill. A 1994 school-bond issue that required a 39-dollar-a-year tax increase went down in flames, largely because of resistance from seniors.*





350 championship boxing matches, including three on the card this night—beheld a sea of glamorous people, scary-looking people, rich people, sexy people. Astonishingly sculpted women draped themselves over ponytailed punks resplendent in gold chains, pendants, and rings that easily outweighed their dates' baubles by a factor of ten. Between rounds, in the \$500 seats cellular phones were brandished like sabers.

I headed up to the stands, up to the \$50 seats. Here there was enough space for some folks, mostly locals, to stretch out. In the outdoor arena, with the purples of sunset and the lights on and the halfhearted cheers of the crowd rising into the slightly breezy sky, the atmosphere was not unlike a well-attended twilight softball game.

"Lots of towns identify with their professional teams," said a fellow in shorts and a T-shirt that read, "Ask Me About My Beer." "They have a football team and a baseball team. Here our home team is two guys beating each other's brains out."

Below, the thud of leather gloves drew a cheer. A flurry of boos followed as the fighters fell into a clinch. The ref pushed them apart. I recognized that same referee, Richard Steele, a few days later when I dropped in on a North Las Vegas community center. He was coaching a few local kids as they duked it out in two raised boxing rings. His true calling, he confessed, is to help Las Vegas youngsters wage heavyweight bouts against drugs, booze, and violent crime.

Down the hall from the gym is a corridor of classrooms where



*Vegas drinks from Lake Mead, where the Colorado River meets Hoover Dam. Officials are taking a thirsty look at the Virgin River to the north-east, but thanks to conservation, "Nevada won't reach full use of its annual Colorado River apportionment until 2008," says Las Vegas Valley*



*Water District head Pat Mulroy. "And currently unused shares of the river will take us to 2030." Still, asks Norbert Riedy of the Wilderness Society, "Will there be enough water left over elsewhere to preserve natural vegetation? At some point, conservation will be essential."*



local kids are taught practical skills for finding and keeping jobs: standards of appearance and behavior, interview strategies, résumé preparation.

The center, built by a partnership of government and civic groups and a casino-funded foundation, is located in a neighborhood that went up in flames during a 1992 riot triggered by the Rodney King verdict in Los Angeles. A block or so away are the boarded-up cinder-block boxes of Madison Terrace, a public-housing project so neglected the mayor closed it down.

But there are some indicators of community health as well. Las Vegas's minority middle class, for example, is growing steadily. According to Yvonne Atkinson Gates, chairman of the board of county commissioners, "As many African Americans live outside our traditional black neighborhoods as live inside them."

Gates took me on a tour of the city's neighborhoods. Mere blocks from the blight of Madison Terrace stood street after street of well-tended single-family homes. "I grew up here," said Gates. A few blocks farther and we were back in a no-man's-land of vacant lots. In one of them—the site of the old Cove Hotel, where Sammy Davis, Jr., and other black entertainers stayed during the era of segregation—four men stood idly staring at the ground.

"There's a lot of heroin activity around here," Gates said sadly.

Las Vegas's Hispanic population, larger than the African-American community, shows a similar range of poor-to-middle-class neighborhoods, with perhaps a bit less conspicuous spending on social programs. But the small-business storefronts thrive with Spanish-language signs, and on weekends the streets vibrate with music from neighborhood dance clubs.

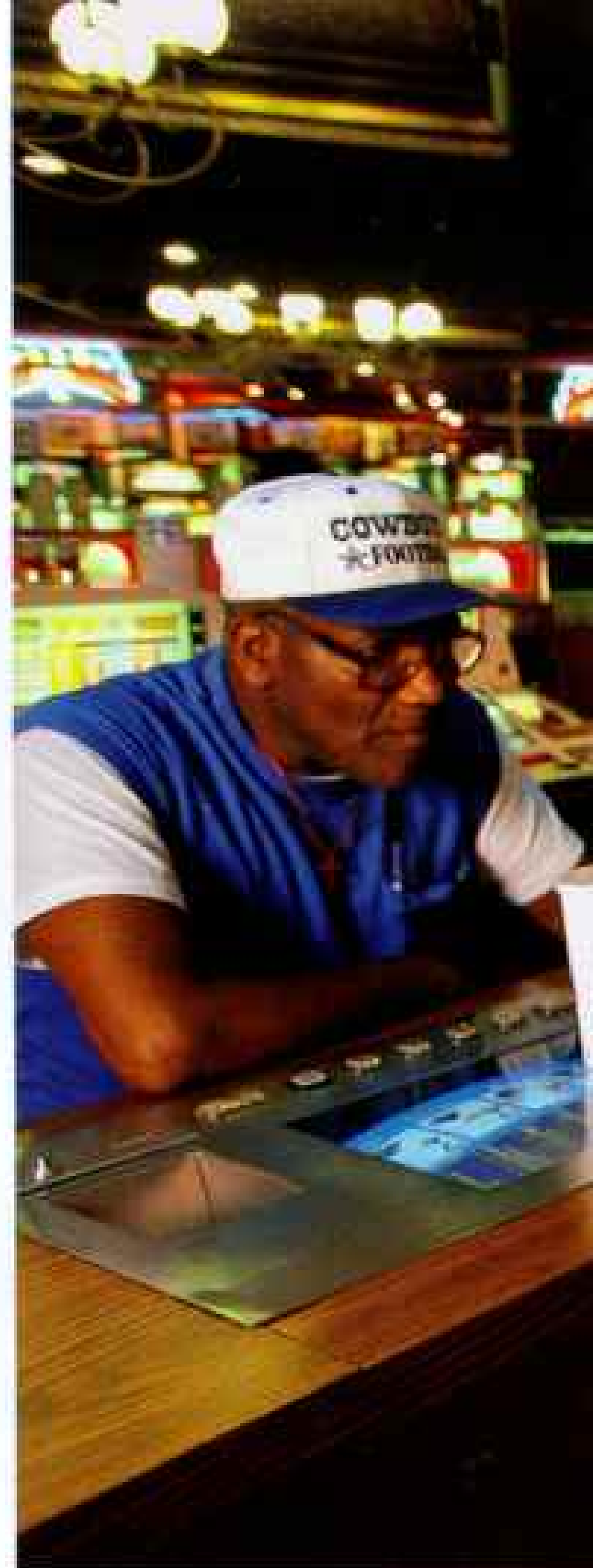
We drove to the northern reaches of the city. Across the street from a stucco wall surrounding a new residential community stood a rustic old ranch house, shaded by a few forlorn trees. In the yard a horse pulled at the grass. Just five years ago that old fella could have galloped off for miles in any direction. "A lot of people moved out to these ranches in the middle of nowhere years ago just so they could ride their horses," says Gates. "Well, now the developers have built right around them."

By car you can orbit many of the valley's new communities—with wistful names like Crystal Bay and Club Pacific—but you need an invitation from a resident to get inside. Almost all have electronic gates and, in the more pricey neighborhoods, uniformed guards in reflective sunglasses. Visible through the bars are children on in-line skates, retirees out for walks. On weekends, barbecue smoke wafts over the walls.

The gated-community craze has even taken hold in the valley's low-income districts, where entire apartment complexes are fenced in. "I like the gated developments," said Gates. "The city is growing so fast; they give people a sense of community."

Visitors tend to run for air-conditioned cover as soon as they arrive in town, so they seldom see the local folks heading off for weekends in the mountains or gingerly navigating their boats around crowded Lake Mead. Of course, outdoor recreation does take on some bizarre permutations in a 24-hour town, as Hilton president Gary Gregg discovered when he joined a softball league.

"The games started at 5 a.m., at the community college. Half the guys were drinking coffee, trying to wake up, and the rest were



*Invoking the spirit of Vegas's patron saint, Elvis Presley, a bartender tries to croon up audience karaoke participation at the Pioneer Club on Fremont Street in downtown Vegas. Once the center of gambling, downtown declined as crowds and investment bucks flowed to the glitzy Strip. But a 70-million-dollar face-lift—including a 90-foot-high, four-block-long canopy that features a 2.1-million-bulb light show—is breathing new life into Glitter Gulch. Going upscale has its price. The decidedly seedy Pioneer Club has since folded.*



having a couple of beers to unwind after a night shift. About the fifth inning the sun came up, and the lights went off. It was like living backward," said Gregg.

**I** DROVE UP BONANZA ROAD, which leads from downtown, climbs several hundred feet, and dead-ends at the foot of Sunrise Mountain with a commanding view of the whole valley. This used to be a popular lovers' lane—until the Mormons built their spired temple at the end of the road. At night the temple watches over the valley like a bemused guardian angel. The lights of the valley appear as in a galaxy. Downtown and the Strip glow at the thick center, with great arms of starry lights spinning outward from it. Like a spindle at its center rises Vegas's latest addition, the Stratosphere Tower. At 135 stories, it's the tallest thing west of the Mississippi. There's a roller coaster on top.

I was reminded of the competing theories on the fate of the universe: expansion to the point of oblivion, eventual collapse under its own weight, or a delicate balance resulting in permanent equilibrium. Las Vegas faces a similar set of possibilities. And for the city of the Next Big Thing, how that plays out will be the biggest thing of all. □

# STRAIGHT UP ICE

**“Because it’s there” was once the motto of mountaineers. For them, conquering the pinnacle was the point. In their footsteps comes a new breed — climbers, like this one in Tibet, for whom reaching the summit isn’t as meaningful as the skill and thrill of scaling vertical ice.**











Clutching her ice axes, Junko Sekiguchi (left) negotiates an overhang on The Good, the Bad, and the Ugly, a 150-foot frozen waterfall in the Canadian Rockies. Refinements in gear — axes and hammers, ice screws and ropes, carabiners and crampons — have made ice climbing safer and more popular, but the sport is still a demanding test of athleticism, self-reliance, and resolve.

Going ropeless, Marc Twight sticks close to the ground in Colorado while fine-tuning his technique (right). Says Marc, "Action and competence are what count."







Scaling insanely steep ice, like this Alpine glacial pitch (below), became less crazy thanks to Yvon Chouinard, dean of modern ice climbing. In 1966 he put a slight curve on the pick of the ice ax — and thus gave Rolando Garibotti (right) a more solid hold.



SHIRAZ DAVIES (ARDFEL); BOB WALK

## BY JON KRAKAUER

**T**wo hours down Interstate 90 from my Seattle home, in the windswept desert of central Washington State, an escarpment of basalt juts sharply from the sagebrush flats of Frenchman Coulee. In the spring and early summer a humble waterfall trickles from the brow of this cliff. But now it's January. The sky is the color of dirty dishwater, the dime-store thermometer clipped to my backpack reads 8°F, and the air has a metallic bite that coats my nostril hairs with frost. The small cascade has turned into an icicle as tall as a ten-story building. Gripping an ice ax in each gloved hand, I shuffle through ankle-deep snow to the

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JON KRAKAUER, who survived a deadly storm on Mount Everest last May, wrote "Rocky Times for Banff" in the July 1995 issue.

base of the waterfall and crane my neck to take its measure.

As fat as a factory smokestack, the icicle is corrugated with delicate flutings and weird, cauliflower-like protuberances. It glows a mysterious shade of blue, as if lit from within. Nobody seems to remember who first climbed this icicle, or when. Some winters it never gets thick enough to try.

Standing at the falls' base, I take careful aim at a patch of smooth, relatively solid-looking ice, swinging my left ax from the shoulder—once, twice, three times, spraying forth a flurry of crystalline shards—until the pick lodges firmly above my head with a distinctive *thwunk!* I repeat the process with the ax in my right hand, then pull my body up with straining biceps. Clamped to the soles of my

plastic mountaineering boots are crampons—a grid of two-inch spikes, sixteen per boot, two of which point forward at the toe. Kicking the front points into the icicle, I gain a tenuous purchase that allows me to shift weight to my legs from my arms.

Alternately swinging my axes and kicking in my crampons, I hoist my bulk up. Ten minutes after starting my ascent, I hang from the wrist loops of my tools and glance down between spread-eagled boots. Already I'm far above the flats. The view releases a surge of brain chemicals that blows the rust from my cerebral pipes.

Pay attention, I tell myself aloud. This is serious. As if I needed to be reminded.

Ice climbing has been described as a dance with gravity, a sort of vertical ballet. If so, it's a shockingly brutish pas de deux, a feral two-step that usually involves no small amount of grunting and bashing and flailing. Ninety feet off the deck the solid blue ice of the lower part of the pillar gives way to a brittle, milky honeycomb riddled with hidden air pockets. No matter how delicately I direct my swings, huge chunks of ice—some weighing 30 pounds—cleave off beneath my blows, brush past my shoulders, and smash into the talus below. My forearms burn from the strain of hanging on. I gasp for breath in the bitter air. My knees begin to quiver.

An hour ago I was sipping coffee in a warm truck, listening contentedly to a scratchy country-music station out of Ellensburg. Now I'm huffing and puffing with failing muscles, struggling to keep fear at bay. My attachment to the world has been reduced to a few thin points of steel sunk half an inch into a giant Popsicle. I'm ascending solo, without a rope,







as ice climbers often do. With 22 years of experience under my belt, I'm confident that I'm not going to fall. Nevertheless, I am excruciatingly aware that a blunder could be fatal.

Which explains why, paradoxically, I feel more alive than I have in a month. Ice climbing restores the primal hues that have been bleached from the canvas of civilized existence. It lends one's actions an immediacy, a delicious gravity that is sorely lacking in workaday life. What you do on the side of a frozen waterfall matters. And despite the danger, each year fewer than half a dozen of the thousands of waterfall climbers in North America die (perhaps because ice climbing is so unmistakably hazardous that the unqualified are scared away before they get far enough off the ground to kill themselves).

Make no mistake: Ascending vertical ice is not for everyone. Even dedicated alpinists and rock climbers—a group not noted for prudence—often view waterfall climbing as a suspiciously masochistic pastime.

"Ice climbing?" declared one of my rock-climbing brethren when I invited him along on this excursion. "You want the name of a good therapist?"

Climbers have been scaling ice since the sport of mountaineering was invented in the Alps in the late 18th century. Alpinists of yore would ascend icy gullies and faces in order to achieve the summit of a mountain, but only when the ice in question was considerably less than vertical. During the 19th century climbers tackled icy slopes by arduously hewing steps and handholds with crude woodchoppers' axes.

It wasn't until the late 1960s that climbers had the tools or the inclination to tackle truly vertical ice. Hard-core ice climbers began to seek out

frozen waterfalls as worthy goals in their own right, finding that the cumulative challenges of an entire mountain could be distilled into a hundred-foot pitch of radically steep ice.

Climbers also discovered that ice is a wonderfully protean substance. Depending on temperature, humidity, water volume, and underlying rock strata, falls may freeze into mirror-smooth surfaces, freestanding icicles, or delicate, rococo curtains. Most of the time the ice is some opalescent shade of blue or aquamarine, but it can also be yellow or brown or blinding white.

And whatever form it takes, frozen water is such a mutable, impermanent medium that any given climb is apt to change profoundly even from week to week, so one climber's ascent is seldom like another's.

Now, high above the floor of Frenchman Coulee, fastened tentatively to a pilaster of frozen slush that's crumbling beneath my blows, I fight to put a lid on my rising panic. It occurs to me that instead of bludgeoning the fragile ice to bits, I might have better luck gently inserting my axes into natural voids in the ice. Placing my tools as meticulously as a surgeon, I hook my way to the top of the icicle, pull onto level ground, and shake out my cramping arms.

Waves of relief ripple down my spine. For the first time, I notice that it's snowing hard and apparently has been for some time. The heaving of my lungs resounds against the silence of the desert. It feels glorious to be up here, the danger behind me, alone in unspoiled country on a winter afternoon. But after a few minutes I cut short my reverie and turn to scramble down the back of the cliff. I know of another waterfall not far from this one, and there's still time, if I hurry, to climb it before dark.

The frozen face of Curtain Call, a waterfall in Canada's Jasper National Park (opposite), poses some problems for Barry Blanchard and Marc Twight, but that's the fun.

Going up, the rhythmic *thwunk-thwunk, tack-tack* of picks and saw-toothed crampons (below) anchors a climber's internal chorus of awe and adrenaline. "The thing that happens after mediocrity," says Twight, "is the ground."



CHRIS NOBLE (OPPOSITE); BRAD WHEELER





Shattering the curtain on Alberta's Mount Wilson, Geoff Brugler gets a jolt on his rope and a whiff of the danger that fuels this sport. Observes Yvon Chouinard, "Only from the extreme of comfort and leisure do we return willingly to adversity."

WHAT A HOWL!





**Just doing it:** Climbers learn the ropes at Colorado's Ouray Ice Festival (above), which has helped transform an offbeat pastime into a popular sport. In Courchevel, France, climbers convene each winter at Le Glaçon — The Ice Cube — a man-made icicle with a skeleton of steel (right and top right), where climbers go head-to-head in tests of speed and style. Such organized contests are rare, however. For most participants ice climbing is less about conquest than about testing their mental and physical mettle. Few sports reveal the inner self so ruthlessly: High on a frozen waterfall there is no room for self-deception. □



# EVENTS



WILL WATCHER (AROVE), BRIDGER HOFFER



By PETER ROSS RANGE

Photographs by GERD LUDWIG

# REINVENTING



Inhibitions evaporate in the blazing sun as hundreds of thousands of "techno-heads" — fans of hard-edged, high-decibel, computer-driven music — converge on Berlin for the Love Parade, an annual summer blowout. But good times are tempered by growing pains as Germany's newly mended capital struggles to heal itself from the traumas of the 20th century.

# BERLIN







Keeping the peace where superpowers once squared off, a policeman walks a beat past now demolished Checkpoint Charlie, the Berlin Wall's most infamous crossing. Coming soon: a swank business complex designed in part by American architect Philip Johnson, whose image towers



above the site. Big-name architects loom large in post-Wall Berlin, where jackhammers have replaced jackboots and battles erupt over building styles. "Architects here are like football stars in the U.S.," notes an American diplomat. "People choose sides and cheer for the one they like."

**M**ARK PALMER, an American diplomat turned real estate mogul, has something he wants to show an American visitor. "Look here," he says, striding down a hall into a narrow room with a small window. "The Stasi punched a hole in the side of the building so they could look over the Berlin Wall and watch the CIA watching them."

Stasi is short for *Staatssicherheitsdienst*, or State Security Service—the secret police of the former communist state of East Germany. Both the police and the country are history now, and this nondescript building, where the Stasi spied on the U.S. Central Intelligence Agency for nearly three decades, is, like almost everything else in Berlin, in a state of profound change. The Stasi's lookout post, now Palmer's corporate headquarters, stands on Checkpoint Charlie. This was the most famous crossing point in the Berlin Wall. It was here, in 1961, that Soviet and American tanks looked down each other's gun barrels as East Germany rushed to seal the border and stanch an exodus of refugees from communism.

Today Checkpoint Charlie is the site of a 680-million-dollar construction project—one of hundreds in progress throughout the city. Checkpoint Charlie will soon be the American Business Center, a glitzy, five-building complex of high-rent offices, upscale apartments, and tony shops. "It took us forever to buy all the land—45 different pieces," says Palmer, who, with his German partner, hopes the American Business Center will become one of the most sought after addresses in Berlin.

Looking out the Stasi spy window evokes powerful memories. In the 1960s I often passed through Checkpoint Charlie to report on life in East Berlin. Grim East German guards wheeled mirrors beneath my car, searching for any person or thing that wasn't allowed in or out of their secretive police state. They read my notebooks, copied my documents, picked my brain.

Those inconveniences were part of my job as a journalist, but for Berliners the decades of division were more heartbreak than

Pickup soccer and picnics fill a laid-back afternoon at the Tiergarten, Berlin's version of Central Park and a popular retreat for the city's Turkish transplants. Germany's capital is a notably multicultural metropolis: One in eight residents is a foreigner. Though most native Berliners condemn the xenophobia of neo-Nazis, economic hardships brought on by reunification have strained the city's powers of assimilation.



inconvenience. Families were split, communications cut. Isolated 110 miles behind the East German border, two million West Berliners lived in a capitalist oasis encircled by concrete and barbed wire. A treaty in 1972 made it possible for West Berliners to visit the eastern side, but most of the one million East Berliners couldn't travel to West Berlin—or anywhere else outside the communist bloc. More than 5,000 East Germans made daring escapes over, through, or under the Wall, but at least 80 died trying.

All that ended on November 9, 1989, when East Berliners breached the Wall and their city began to reunite.\* Now I've returned—

\*See "Berlin's Ode to Joy," by Priit J. Vesilind, in the April 1990 issue.

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my sixth visit since the Wall fell—to find out how Berlin is coping with the epochal changes history has thrust upon it. Germany's former capital, discredited and all but annihilated in World War II, is reincarnating itself as the leader of Europe's richest, most populous, and most powerful country.

By the end of the century the German government will move from provincial Bonn to cosmopolitan Berlin. Meanwhile the new capital is undergoing a 135-billion-dollar makeover—the most ambitious urban-renewal project ever—as it struggles to become whole again and, in the process, to transform an economy shorn of the massive federal subsidies it received during the Cold War.

Wherever I go in this high-energy city, the

atmosphere crackles with action and anticipation. Christopher Isherwood, whose *Berlin Stories* evoke the 1930s (and were the basis for the musical *Cabaret*), called it that “indestructible something . . . that is immensely exhilarating.”

“From Berlin, the only other place is New York—then you’ve reached the end of the world. London, Paris, they don’t do anything for me,” says Andrej Woron, a Polish theater director who came here from Warsaw a decade ago. Woron established Teatr Kreatur, a 99-seat theater on the fourth floor of an old tenement building near the Landwehr Canal. His award-winning plays about the dying 1930s culture of Eastern Europe have been popular throughout the continent.



Swathed in silver fabric, the "Wrapped Reichstag" was Berlin's biggest draw in 1995: Five million people came to see the two-week spectacle staged by artist Christo and his wife, Jeanne-Claude. "Before there was this ugly, gray building," says one Berliner. "Then this beautiful work of



art appeared. Everyone was touched.” Not all were touched the same way, however. To some, this cocooning of Germany’s once and future parliament building symbolized the nation’s struggle to emerge from its divided past; to others, it represented a monumental waste of money.



"Here you feel blood and sweat; you feel World War II," says Woron, waving his cigarette in the European manner. "Everything here is intensified. If an artist goes to Berlin, that means he's really going to work. Berlin is really dynamic, really international."

Indeed, the city has one of the liveliest cultural scenes in the world—three operas, six symphonies, and more than a hundred theaters are supported by the local government's 760-million-dollar arts budget.

**B**ERLIN ITSELF is like an unrehearsed play. No one knows how it will all turn out, not even Hans Stimmann. Stimmann was the city's building director from 1992 through 1995, when critical decisions were made about the rebuilding of Germany's capital. "We're creating a new city," he explained. "Berlin is the only place in the world where the center is empty. It's like an operation on the heart without the rest of the body feeling anything."

The empty center is in fact a slash miles long and several hundred feet wide that marks the division of the city by the Berlin Wall. At the city core it runs nearly a mile from Checkpoint Charlie to the Brandenburg Gate and the nearby Reichstag, Germany's pre-World War II parliament building, which sits on a bend of the Spree River. The Spreebogen, as this bend is called, will house a federal quarter, where futuristic parliament buildings and a new chancellor's office will cover the broad meadows surrounding the Reichstag. Partly gutted by fire in 1933 and captured by Soviet soldiers in 1945, the 102-year-old Reichstag is being refurbished for Germany's modern parliament, the Bundestag.

Halfway between the Brandenburg Gate and Checkpoint Charlie lies Potsdamer Platz—Europe's busiest square in the 1930s, when tens of thousands of cars a day, regulated by Europe's first electric traffic light, flowed out of its six intersecting streets. Because Hitler's headquarters was only two blocks away, the stately crossroads was flattened in 1944 and 1945 by American and British bombers. Stuck in the no-man's-land next

With two miles down and 24 to go, runners competing in the Berlin Marathon pass through the reopened Brandenburg Gate into eastern Berlin, where stacks of building supplies create a bottleneck. After more than four decades of communist rule, the eastern sector is beset with a crumbling infrastructure that requires major repairs. The city center has been blueprinted for renewal (map) as Berlin prepares for the German government's move from Bonn.





to the east-west dividing line after the war, the square was never rebuilt.

Today Potsdamer Platz is Europe's largest construction site. Two of the world's leading corporations, Daimler-Benz and Sony, along with several others, are creating a 3.5-billion-dollar complex of office towers, condominiums, entertainment facilities, and shopping malls above an underground rail station. Scheduled for completion by the year 2000, Potsdamer Platz will form the commercial heart of Berlin, a city within the city expected to attract a daytime population of 100,000.

"We're healing a wound here," explains Ute Wüest von Vellberg, a Daimler-Benz official, as we climb to the roof of one of the two prewar structures still standing on Potsdamer Platz. From the rooftop Berlin's skyline is a forest of construction cranes.

Yet even as real estate booms, the city is

German and American families until Thursday, then returns home to her 12-year-old daughter, who has spent the intervening days with her grandmother. Mother and daughter have been living like this since 1990.

"I don't like working in Berlin," Maria tells me one day. "But I earn five or ten times as much as I could in Poland."

The underground economy keeps people like Maria busy, but there aren't enough legal jobs to go around. Berlin's unemployment rate is 15 percent, nearly five points above the national rate, now hovering near its highest since 1948. Crime has increased, especially auto theft, burglary, and smuggling. A Russian mafia traffics in art and religious icons, and Vietnamese sidewalk peddlers, who sell untaxed cigarettes smuggled into Germany, jam into squalid housing on the outskirts of eastern Berlin. Turf fights among the



Recalling Berlin's darkest hour, pedestrians at the Spiegelwand, or reflecting wall, come face-to-face with victims of the Nazis' genocidal campaign that claimed nearly 72,000 of the city's Jews. "There is no denying these events," says one viewer. "All the past is coming out of the ground."

beset with growing pains. Many high-rent office buildings hastily erected in the early 1990s stand partly vacant—victims of political wrangling that delayed the federal government's move to Berlin by at least five years.

At the same time, foreign workers—legal and illegal—have flooded in from eastern Europe and from western European countries such as Britain and Portugal. My housemaid for two months, a woman I'll call Maria, is one of thousands of Poles and other eastern Europeans who work in the city without permits. Every Monday Maria, a single mother, drives five hours from her home in Poland to Berlin. She does housecleaning and other chores for

Vietnamese ended in at least 15 gang-style murders in the first half of 1996—the dark side of the new reality in a city where change is nothing new.

**B**ERLIN WAS BORN around 1200 as a pair of trading villages on opposite banks of the Spree. In this century alone the city has experienced four incarnations and is now going for its fifth. In the early 1900s it was Wilhelmine Berlin, the graceful capital of the kaisers but also a hotbed of German militarism until Germany's defeat in World War I. From 1919 to 1933, it was the capital of the Weimar Republic and a font of





Exposing the enemy within, archivists review reams of film collected by the Stasi, East Germany's secret police, over decades of prying and spying. The files reveal that Stasi tentacles were long. "They reported on how I folded my underwear!" says one woman whose bedroom was invaded.

artistic creativity, scientific achievement, and political experimentation. This was the Berlin of Bertolt Brecht and Albert Einstein, Bauhaus architecture and dadaist art. Then, in 1933, Adolf Hitler and the Nazis took over, with devastating consequences 12 years later. "This city can never be rebuilt," British Air Chief Marshal Sir Arthur Tedder concluded in 1945, after surveying the damage by Allied bombardment.

He was wrong, of course — Berliners did rebuild, brick by brick. And now they're doing so again, replacing Stalinist architecture and shabby construction with emblems of modern capitalism, from the American Business Center to Potsdamer Platz. Germany's largest city — 3.5 million residents spread over an area eight times that of Paris — presents the visitor with a gantlet of bulldozers, scaffolding, and detours. The Kurfürstendamm, Berlin's flashy shopping boulevard, is often gridlocked even at midnight, and from the balcony of the Café Kranzler the scene resembles Times Square without the grime. A 30-by-40-foot electronic billboard, which proclaims itself

"the world's largest electronic newspaper," flashes news and jokes every four seconds — the attention span of the average fast-talking Berliner.

**F**OR ALL ITS VITALITY, Berlin faces an unprecedented challenge: blending east and west into a single entity. "Never before have two cities with more than a million residents each been forced to join, though they had totally different social, economic, and political systems," says Michael Cullen, an American urban historian who has lived in Berlin for 29 years.

One morning I ride the elevated train to Marzahn, a huge public-housing project on the fringe of eastern Berlin. I want to find out how high school students and teachers raised in East Berlin are adjusting to the changes brought by reunification.

"You don't mind traveling in a Trabi, do you?" jokes Volker Dehnz, a schoolteacher who meets me at the train station. I chuckle and enjoy the ride in his Trabant — a plastic-bodied relic of East German manufacturing



Comrades in arms, Soviet Premier Leonid Brezhnev and East German leader Erich Honecker go mouth to mouth in this mocking portrait at the East Side Gallery, an open-air collection of political art painted on the longest extant stretch of the Berlin Wall. Part of the gallery is now draped



in plastic for protection against the elements—and souvenir-seeking “wall peckers.” Honecker, who supervised the building of the partition in 1961, declared in January 1989 that “the Wall will still be standing in 50 and even 100 years.” Ten months later, the despised barrier came down.



that sounds like a lawn mower and spews blue smoke into the air. We pass endless rows of look-alike prefabs, home to 160,000 people.

Dehinz's feelings about reunification are mixed. Materially, he admits, he's much better off since the Wall fell. "It's not that I make more money," he says, "but the fact that there are more things to buy with it, at much better prices. In the old East Germany you had to wait maybe ten years to buy a not-very-good car. Now I have two cars. The other one is a Chrysler minivan."

But Dehinz regrets the loss of the East German social net—free health care, day care, and after-school recreation, and guaranteed lifetime jobs with decent pensions. He also misses the less competitive atmosphere of socialism. "Our life in East Germany was more personal, more relaxed, a lot friendlier. East Germans tended to work things out rather than quarrel the way westerners do. We weren't as focused on material things. Life was simpler, easier to manage."

At the school, Dehinz introduces me to a group of 11th and 12th graders. I ask how their lives have changed in the past five years. "I like the great choice of things I can buy now," says Ronny, echoing Dehinz. "But the western stores have a better selection. What they can't sell, they send over here to our stores."

Mandy, a 12th grader who has seen her parents' generation hit by high unemployment, is focused on a career. "I want to become a lawyer," she says. "It's a matter of money."

The worst thing about reunification, complains a youngster named Christian, is that his contemporaries in western Berlin belittle his thick accent—the working-class dialect called *Berlinerisch* that is still widely spoken in eastern Berlin. "It's like another world over there. They say, 'Oh, I don't want anything to do with them—they're from the east.'"

Mandy doesn't expect easterners and westerners to overcome their prejudices soon. "It will take years—things will still run around in people's heads."

Berliners have coined a phrase for this problem: *die Mauer im Kopf*. It means "the wall in the head"—the psychological and emotional barrier that has replaced the Berlin Wall.

Property rights is one issue that's even more vexing than the wall in the head. The reunification treaty allows westerners to reclaim houses and land lost to the communist state and, in some cases, to the Nazi dictatorship.

Wildflowers and a forest of construction cranes herald the resurrection of Potsdamer Platz—once Europe's liveliest intersection, now the continent's biggest building site. Reduced to rubble by Allied bombs, then bisected by the Wall, the void is being transformed by corporate giants Daimler-Benz, Sony, and others into the city's center of gravity. Says one official, "The new heart of Berlin will soon start beating here."



Already thousands of easterners have had to give up homes they had lived in for years, even decades. Others, who have avoided eviction only because of unclear ownership records, feel they're on borrowed time.

One such couple is Jürgen and Sonja Steinert, who used to work for the now defunct East German television network. For 24 years the Steinerts put much of what they earned into a rundown house assigned to them by the communist government, transforming it into a comfortable middle-class home.

"When we moved in, the house had an outdoor toilet," Jürgen tells me over coffee at a picnic table in the fruit orchard he planted. "We spent all our vacations and free time renovating the place. Who does it belong to



now? Nobody knows. The last known owner left in 1934, and nobody knows where his heirs are. But they could show up any day and throw us out.”

It’s a fact that East Berliners suffered disproportionately when the communist system imploded, revealing a hollow economy. Two hundred seventy-five thousand jobs—36 percent of East Berlin’s total—disappeared between 1990 and 1995.

Yet despite the evictions and joblessness in eastern Berlin, there are thousands of quiet success stories. Among them is Goethe & Co., a musty antiquarian bookstore in the Grosse Hamburger Strasse. “It was the fulfillment of a dream,” says Stefan Geissler, a 37-year-old former publishing clerk in the old East Berlin,

who started the business with a partner, using their combined savings of \$2,250. Despite a shaky beginning, Goethe & Co. is now making a small profit.

“Everybody I know is making it—somehow,” Geissler says with conviction. “People who say, ‘Bring back the Wall’ are talking nonsense. Most people are better off today.”

**C**OMING TO GRIPS with the past—*Vergangenheitsbewältigung* in German—is something Berliners faced after World War II and the Holocaust. Now they have another demon to exorcise, the legacy of the Stasi, East Germany’s version of Hitler’s Gestapo. The Stasi was the most powerful institution in society—an

army of 91,000 secret agents, who, along with 174,000 "unofficial collaborators," spied on, harassed, and sent thousands of their fellow citizens to prison.

When East Berliners stormed the Stasi headquarters in early 1990, they were stunned by the sheer volume of secret files. Those files are still being read, and hardly a month passes without another shocking revelation about a public figure, an admired author, or a trusted minister who in one way or another cooperated with the spy agency. While each person has a rationalization for the snitching—to ease the harshness of life under the communists, to win benefits for one's family, to control what the Stasi knew about one's friends—the revelations are devastating: husbands spying on their wives, children on parents, best friend on best friend.

"It's important that those who were spied

When I read my file, I'm surprised to learn that the Stasi tried to recruit me as an unofficial collaborator. There's a pedantic report of a breakfast meeting I had in 1968 with an East German radio journalist who, it turns out, was a Stasi informant working under the cover name Gerda.

In her report, which contains such banalities as "he was slim, energetic," I'm referred to by the cover name Georg. The file shows that Stasi agents followed me around East Berlin one afternoon, writing down every turn I took, every stop at a phone booth, every address I visited. Another entry discusses breaking into my office and suggests compromising me with a prostitute in a traditional "honey trap."

Going through the notes—a meager 149 pages compared with the thousands of pages on many East Germans—confirmed for me



Bristled blondes and other "ravers" dance to industrial-strength techno at a defunct power plant turned nightclub on the city's eastern side. "The fall of the Wall gave a big kick to Berlin's night scene," says club owner Ralf Regitz. As for the dress code, "We admit anyone who looks like he wants to party."

on be the masters of their own information," says Joachim Gauck, a former East German Protestant pastor who is in charge of the files. "I don't want the oppressors to be the only ones who control the intellectual domain. Intellectual liberation must follow liberation in the streets."

Gauck's press aide walks me through vaulted fire doors to the agency's central index—Section F16 in Stasi-speak. Washtub-size rotating trays contain six million index cards, listing the names of those who attracted the attention of the Stasi. In one of those trays is a card with my name on it, dated 1967, the year I moved to Berlin as a foreign correspondent.

what Hannah Arendt, the German-Jewish writer, observed in her book about the trial of Nazi war criminal Adolf Eichmann: that evil acts by a totalitarian regime come about only through the unquestioning participation of bureaucrats and functionaries.

**B**REAKING WITH THE PAST is helped by the constant flow of people between the two sides of Berlin. Westerners are moving east to the funky districts of Prenzlauer Berg and Mitte, where rents are low and trolleys plying cobblestoned streets evoke the Golden Twenties. At the same time gentrification is forcing rebellious





Awaiting their cue, costumed musicians perform Mozart at the Gendarmenmarkt, one of Berlin's grandest squares. The city's insatiable appetite for the arts is fed by 760 million dollars in annual civic spending — a budget nearly eight times that of America's National Endowment for the Arts.

young squatters out of crumbling western neighborhoods; they're moving into vacant eastern buildings, which they're decorating with startling colors and profane, sometimes anarchistic, political graffiti.

Auguststrasse in the eastern district of Mitte is Berlin's SoHo, with several dozen art galleries and studios in a six-block area. "A real east-west exchange is taking place," says Klaus Biesenbach. Biesenbach started the stampede to the Auguststrasse — with its low rents and empty buildings — by converting a former margarine factory into a collection of 20 studios and exhibition spaces called Kunst-Werke, or Art Works.

Yana Milev, an artist who grew up in Dresden, went in the opposite direction, to the working-class district of Wedding in western Berlin. "I moved to the west for the dynamism, the power," says Milev, who has large dark eyes and a geometric tattoo on one shoulder. "Whenever I drive back into West Berlin, I get a kick."

Dynamism is a powerful lure, but earning power explains the presence in Berlin of

450,000 legal foreign residents from 186 countries. Reunification has not affected them equally. The 138,000 Turks in western Berlin are the largest, most entrenched minority. During the 1960s, when the West German economy was booming, Turkish *Gastarbeiter*, or guest workers, eagerly accepted blue-collar and menial jobs. Now former East Berliners and new European immigrants are taking jobs that would otherwise have been available to the Turks.

"We welcomed the fall of the Wall as much as anyone," says Mustafa Cakmakoglu, president of the Berlin Turkish Community, an umbrella organization representing thousands of Turks. "But then Turks started losing jobs to East Germans."

Nevertheless, many second- and third-generation Turks are moving up the economic ladder by starting businesses or entering the professions. They often speak better German than Turkish, and they're proud to be breaking out of Kreuzberg and Neukölln, traditional Turkish working-class districts. Yet Turks often feel discriminated against by



Cultivating peace of mind, Berliners escape the clamor of urban life at a *Schrebergartenkolonie*, or garden colony, on the outskirts of town. Leased for long periods and given such affectionate names as Satisfaction and Corner of Happiness, 83,000 plots stipple this city in which more



residents belong to garden clubs than hold membership in political parties. Harboring 120 square miles of parks, forests, and fields within its limits – more than a hundred square yards for every Berliner – the German capital ranks as one of the world's greenest cities.



native Germans because of their appearance, Islamic faith, even their eating habits. They're stung by the occasional pejorative description of them as dark-haired *Knoblauchfresser*, or garlic eaters.

"We're an integral part of German society, but we're still regarded as foreigners," says Serdar Coskun, a Turk who was born in Berlin and has German citizenship. "Even if you have a German passport and speak fluent German, you're always a Turk in German eyes."

The pitch of xenophobia has risen, as evidenced by graffiti—"Turks Out!"—and hatemongering and sporadic violence by neo-Nazis, mainly in eastern Berlin.

**B**ERLINERS have a reputation for being noisy, self-assured, and opinionated, and one subject about which everyone seems to have a very strong opinion is architecture. No new building goes up without intense debate. High-rise or low? Stone facades or glass? Block-size buildings or town houses on single lots? For the most part the traditionalists, typified by Hans Stimmann, the former building director, are prevailing over the avant-gardists.

"Stimmann said Berlin should be rebuilt out of the Prussian tradition, all stone and masonry," complains Dirk Lohan, an architect from Chicago who was born in Berlin. "Recent designs all follow a pattern growing out of Berlin's history rather than being forward-looking."

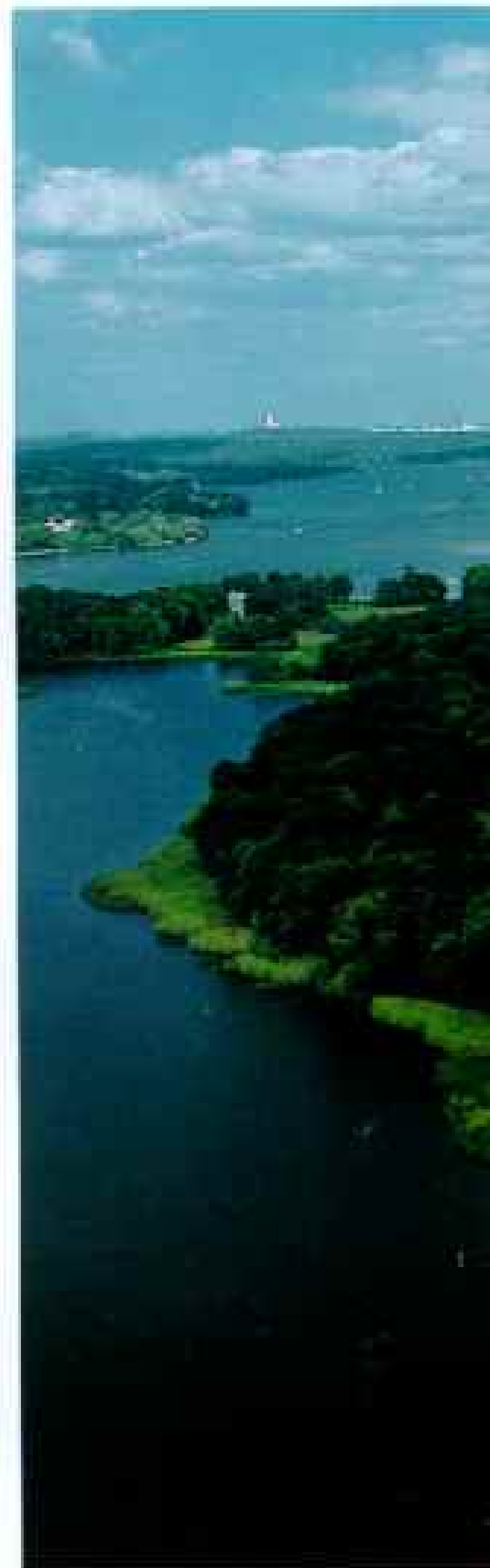
Stimmann's greatest fear was a cityscape like New York's or, worse, Tokyo's. "It's a cultural issue," he told me. "The European city is threatened by shopping malls and glass skyscrapers."

The most controversial architect in Berlin these days may be Daniel Libeskind, a Polish-born Jew and naturalized American who lost most of his family to Hitler's gas chambers. Libeskind's ultramodern design for the Jewish Museum—widely regarded as Berlin's most daring new building—was approved before Stimmann became the building director. The five-level concrete-and-zinc structure calls to mind a jagged lightning bolt. With its sloping underground floors and unusual room shapes, it has deliberate disorienting effects, Libeskind says, intended to symbolize Berlin as a broken Star of David. A "void" 90 feet high in the center of the building represents the near disappearance of the city's Jews.

Pleasing—and deceiving—the eye, a make-believe castle made of wood adds to the enchantment of Pfaueninsel, or Peacock Island, once the private hideaway of Prussian royalty, now a public park. Berlin, likewise, is embarking on a new phase in its history. "Berlin is not a little island anymore," says one resident about the city's new role in a reunited Germany. "Now we must grow up into a capital."

"The Holocaust is not just another event in the time line of Berlin," says Libeskind, a soft-spoken man who wears rimless glasses, as we walk through the museum together. "It's an axial redefinition of Berlin: Berlin without the Jews. You cannot separate Jewish and German history—Jews were the prototypical Berliners. The museum will show the complexity and fatality of the German-Jewish relationship."

After Hitler came to power in 1933, more than 82,000 of the city's 160,000 Jews—many from the cultural, scientific, and business elite—emigrated. Of those who remained, fewer than 6,000 survived the war: The rest died in the Holocaust, along with six million other Jews.





In recent years immigration, especially from the former Soviet Union, has expanded Berlin's Jewish population to about 10,000. No Jewish newcomer is more celebrated than Daniel Barenboim, the Israeli conductor who in 1992 became the music director of the 250-year-old German State Opera on Unter den Linden. Barenboim sees the rebuilding of the opera as a force for reunification.

"Our job is to bring down the intellectual barrier that still exists between east and west," Barenboim tells me one afternoon in his office on a serene square just behind the opera house.

Jerzy Kanal, the head of the Berlin Jewish Community, sees it differently. "The political task of Jews in Germany is to be watchmen—

to make sure Germany is tolerant and democratic and to watch over Germany's attitude toward Israel," says Kanal, who arrived from Paris on a two-week visit in 1953 and never left. "The fact is that Germany is the friendliest country in Europe toward Israel. For years many Jews lived here with packed bags. Gradually they unpacked their bags. When Americans and Israelis ask us, 'How can you live in Berlin?' I say, 'It's fate.' "

Berlin's fate is to lead Germany—and, perhaps, Europe itself—into the next millennium. The city is a microcosm of a new Germany that is emerging from this troubled century, an urban canvas onto which Germans are splashing their hopes and frustrations. For Berlin the reinvention goes on. □

# FLOWERS OF THE

A vibrant underwater scene featuring a large green feather star crinoid in the foreground, surrounded by pink soft corals and other colorful marine life. The background is a deep blue, and the overall composition is rich in color and detail.

*Spreading spindly arms in a brazen burst of color, feather star crinoids adjoin pink coral on a Melanesian reef. Seemingly dainty, these flower-like orbs are in fact tenacious animals whose forebears first appeared more than 500 million years ago.*

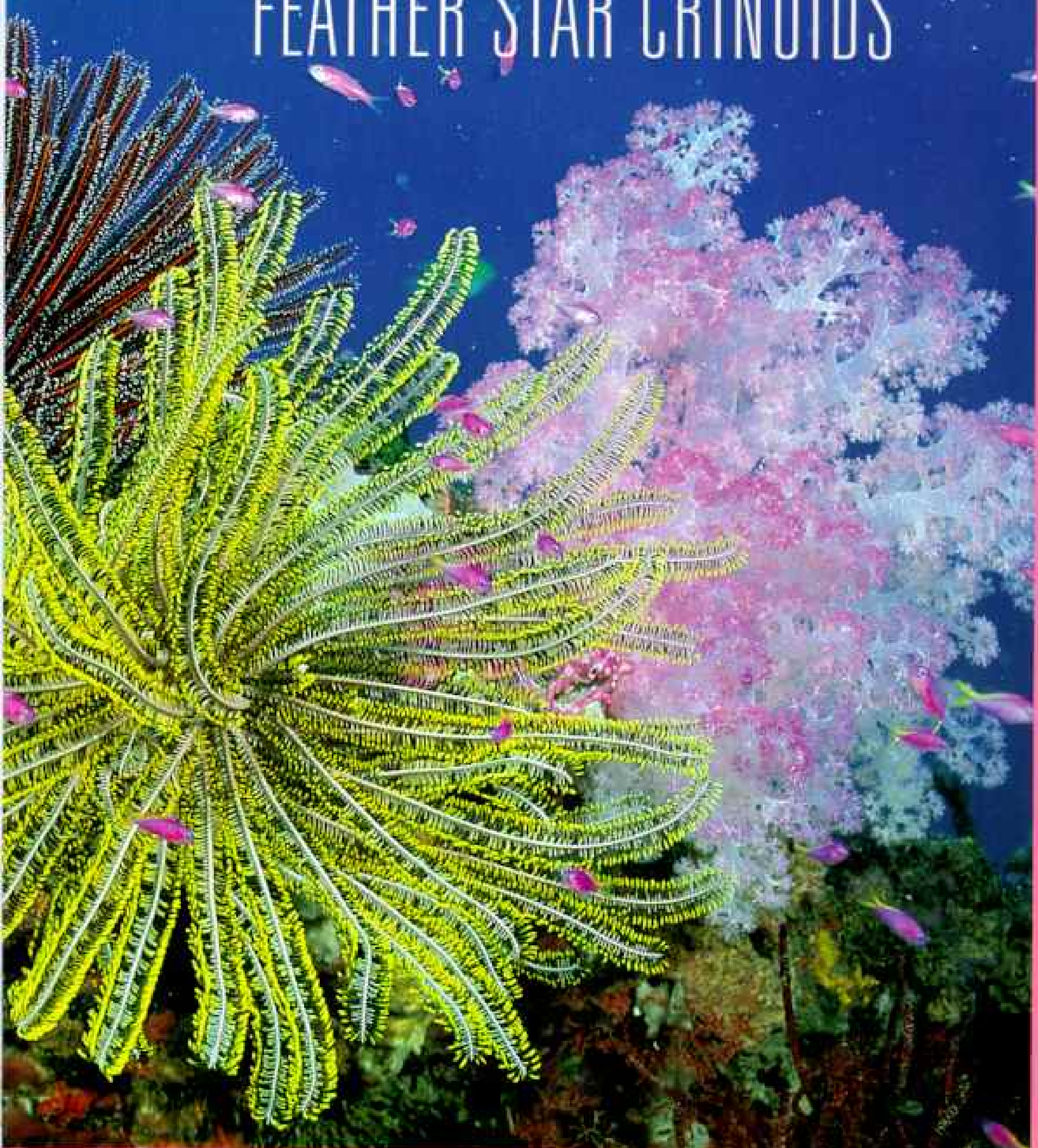
CRINOID, *COMANTHINA NOBILIS* AND *OXYCOMANTHUS BENNETTI*; SOFT CORALS, FAMILY NEPHITHEIDAE



# CORAL SEAS

ARTICLE AND PHOTOGRAPHS BY  
FRED BAVENDAM

## FEATHER STAR CRINOID



FRED BAVENDAM



*With undulating sweeps of alternate arms, a feather star (left) swims as if in a dance. Crinoid species that swim usually do so to find food. Swimming may also help them evade intruders, though to no avail against swift predators like the triggerfish (right). Crinoids are seldom attacked, however; they have almost no edible body mass and the mucus on their prickly arms is sometimes toxic to fish.*





TRIGGERFISH, *HALOPTYLLUS IRIDESCENT* (BELOW)



If Claude Monet had been a diver, he might have bypassed the gardens of Giverny to paint feather stars perched like blooms in a coral vase off the coast of Sulawesi, Indonesia (left). I've encountered many such scenes in more than five years of photographing feather stars, yet I'm still amazed at their beauty and diversity.

Feather stars are echinoderms, members of a phylum that includes sea stars, sea urchins, and deepwater stalked crinoids called sea lilies. Some 600 species of feather stars inhabit waters from the Poles to the tropics, with the thickest concentrations along Australia's Great Barrier Reef and throughout Indonesia and the Philippines. Found in shallow tidal pools as well as waters several thousand feet deep, they can grow to three feet in diameter with yellow, orange, red, green, and white plumage. Some species are cryptic, hiding under coral ledges; some are nocturnal, venturing out at night to feed. Others lounge around reefs all day, clinging to coral with Velcro-like tips on feathery pinnules that line their arms.

Like corals, crinoids are passive filter feeders, catching minute bits of invertebrate larvae, crustaceans, algae, and organic debris wafting in the current. Unlike corals, they can move—slowly—and will often either swim or crawl to the top of coral heads for a prime spot in the current stream, akin to cutting in line at a cafeteria. There's apparently plenty of food to go around, as there is no evidence that crinoids damage the reefs they inhabit.





# HARMONY IN MOTION



GOSBORIAN, GENIE CTEROCILLA

*Poised as if to pluck the strings of a red harp gorgonian, a *Cenometra bella* crinoid clings fast against the current. Nearly always found on such sea whip corals, this species holds on with projections called cirri, which act like grappling hooks. Though crinoids have no brain or eyes, a well-developed nervous system enables them to sense movement, light, and food.*



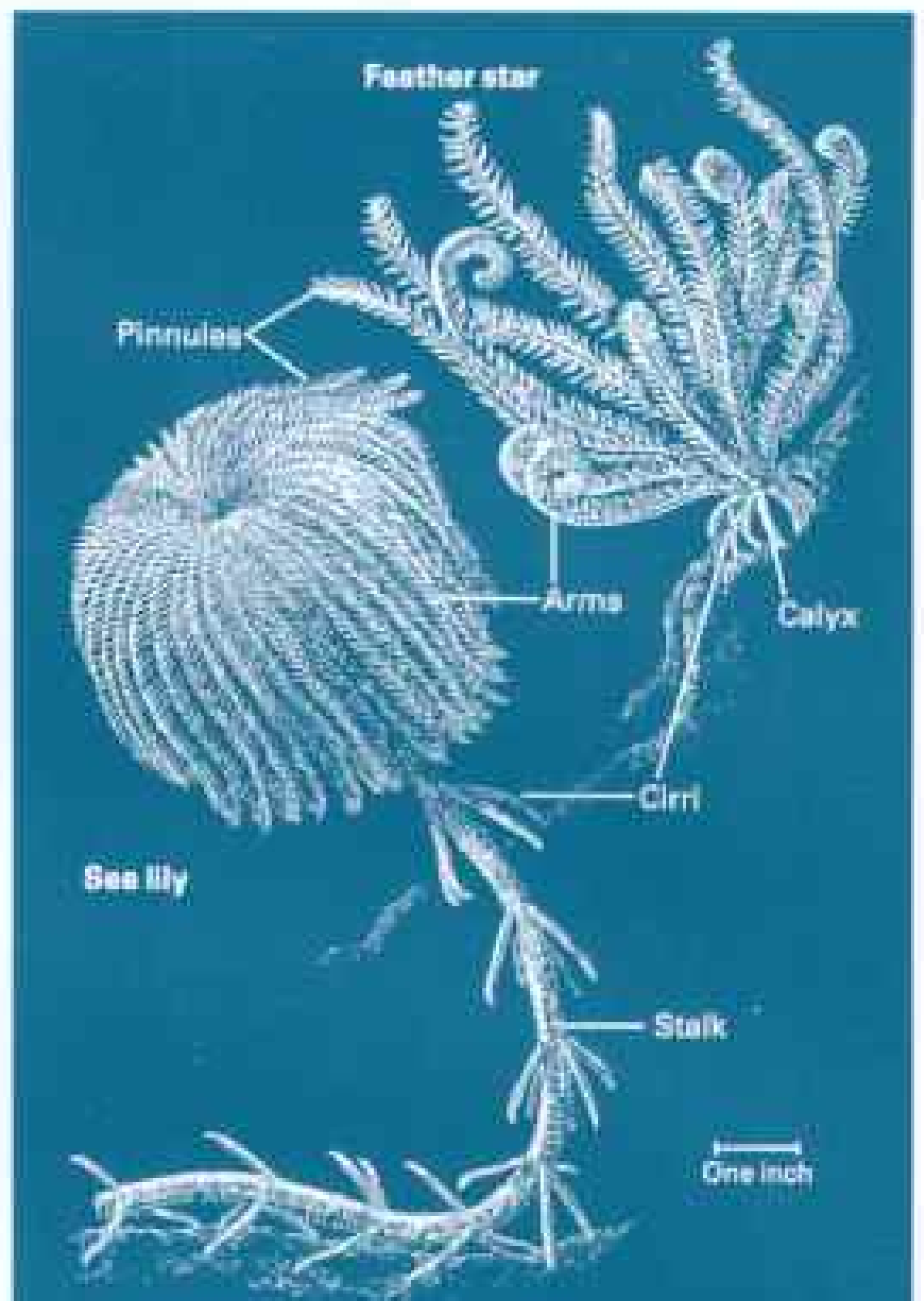
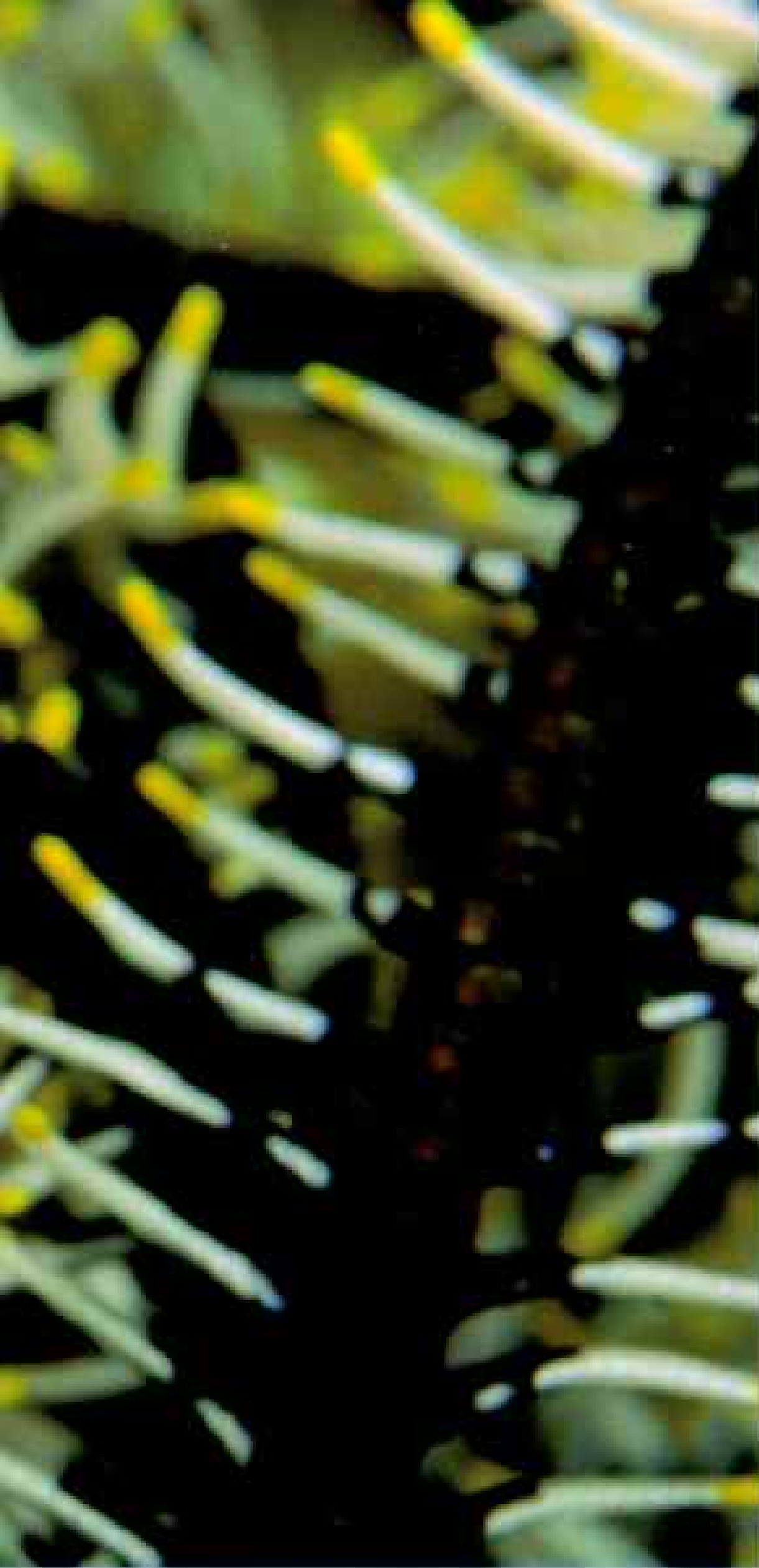
## CRINOID CAMOUFLAGE

*If you stare long enough at a feather star, a creature barely visible may begin to stare back. With few predators and a fortress-like maze of arms, crinoids are ideal hide-outs for a host of tiny commensal animals. Most common of these are various species of *Periclimenes* shrimp (above and right), genetically programmed to perfectly match the color and pattern of the feather star*

*on which they will spend their entire lives.*

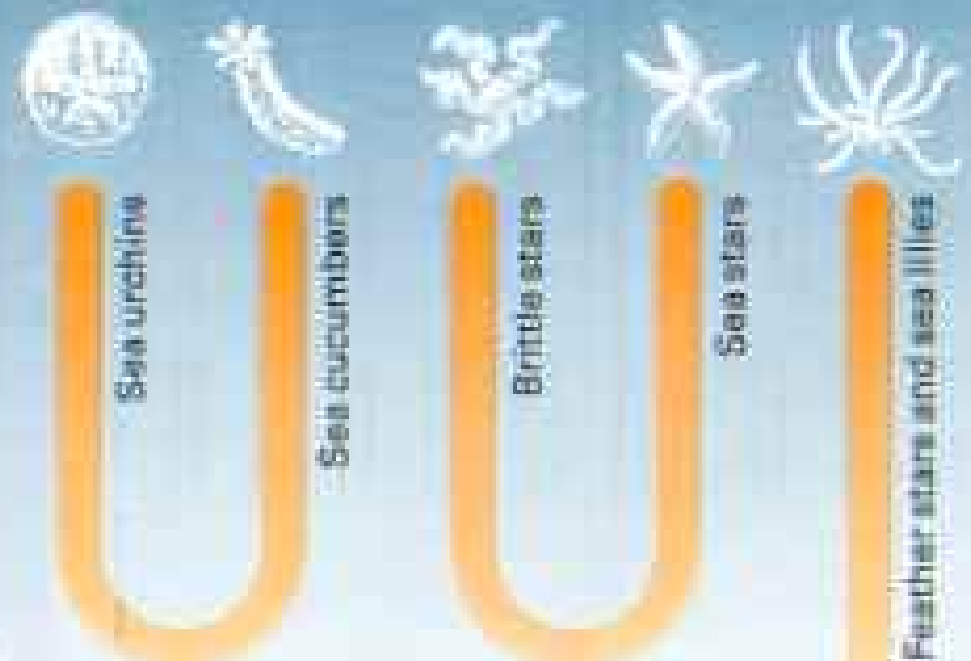
*To roust these camera-shy shrimp—most of which are less than an inch long—I probe every crinoid I see. Wary of their many enemies, *Periclimenes* rarely venture out, tending to scavenge for food drifting through a feather star's arms. Some biologists suspect the shrimp also eat mucus scraped from the host's spiky pinnules.*





## A STAR IS BORN

From early crinoids that clogged Paleozoic seas evolved the two forms alive today. Sea lilies, which live at depths below 330 feet, carry a parabola of arms atop a stalk that often sprouts cirri, used for anchoring. Feather stars lose their stalk early in life and may or may not have cirri. A tiny calyx houses the crinoid gut and forms a base for five main limbs, which branch into numerous arms.



### Echinoderm Family Tree

Derived from the Greek words for "spiny skin," echinoderm refers to saltwater animals with a five-part, radially symmetric anatomy and a calcite skeleton.

ART BY RICHARD L. JONES



HIDE, SEEK,  
AND AMBUSH





SCORPIONFISH, *MIMOPUS SPURAEI* (ABOVE); SHRIMP, GENUS *STYALPNAUS*



CRINOID, *DELYSMATHYS BENNETTI*; CRAB, *ALLOGALATHEA ELEGANS*

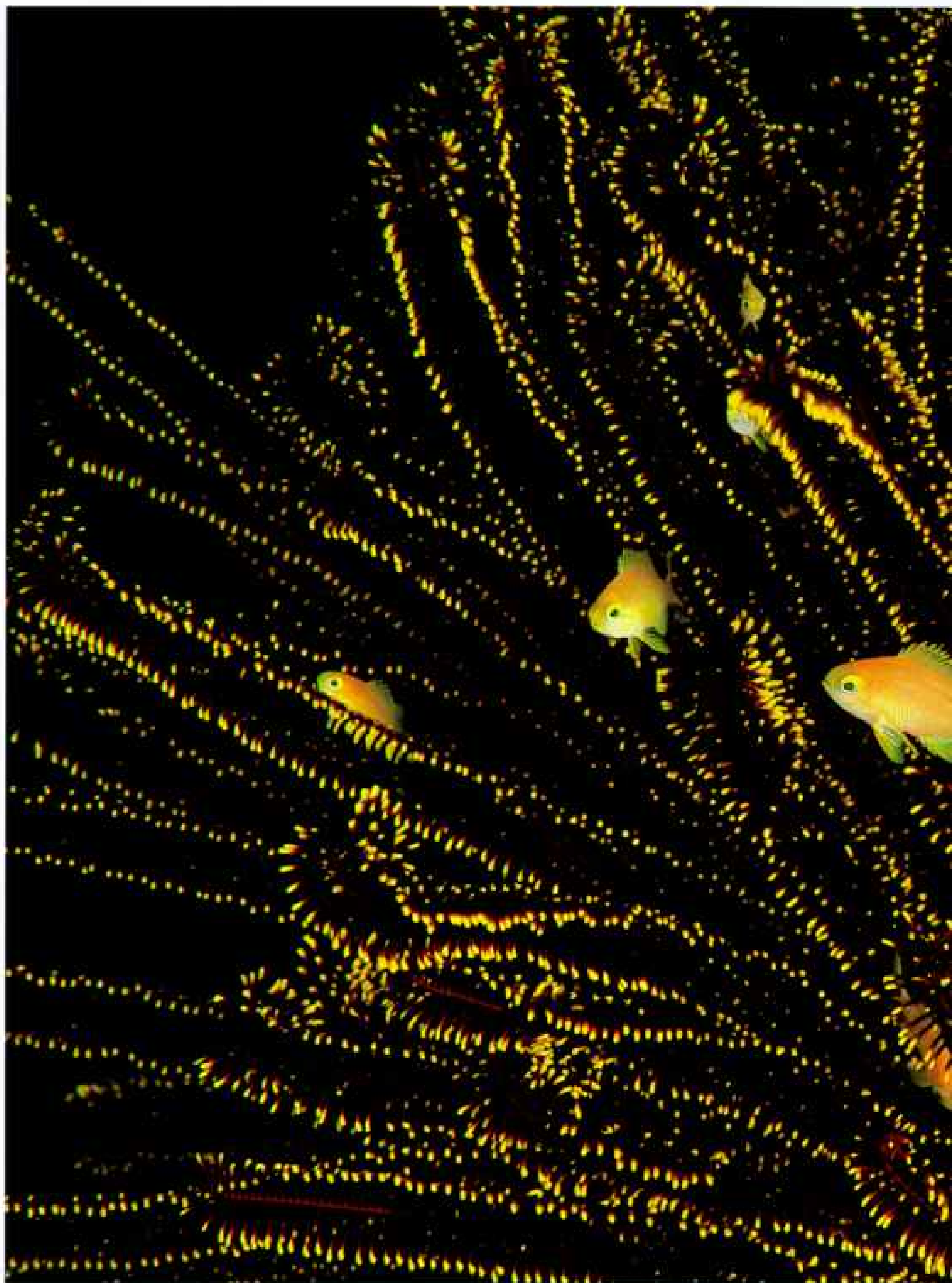
*Even crinoids have their mimics. The rare Merlet's scorpionfish (left), with its lacy fringes and mottled coloring, seems to pose as a feather star, sitting motionless to lure small fish into the apparent safety of its "arms" — then gobbling them up.*

*Equally well-disguised, crinoid commensals can be spotted only by a keen-eyed hunter. Spying the arms of an orange crinoid peeking from a coral ledge near Papua New Guinea, I teased the animal out with my finger and discovered a pair of snapping shrimp nesting on its calyx (below, far left). An elegant galatheid crab (above) — another commensal that adapts its color to its host — seemed startled when caught in the glare of my strobe as it clung to a feather star off Manado, Indonesia. Long clawlike cirri beneath this crinoid's arms anchor it to the reef.*

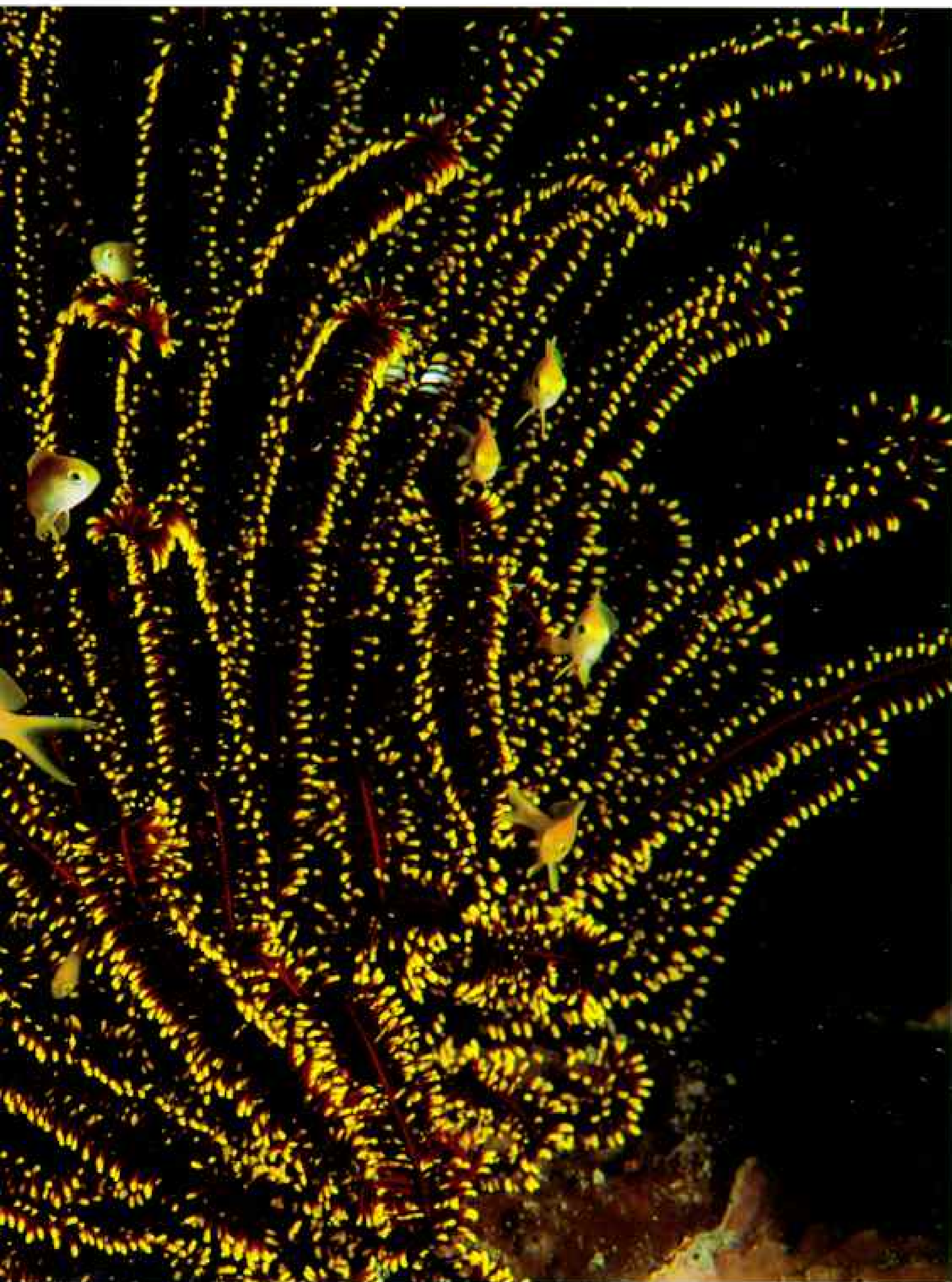
*While commensals use crinoids for shelter, other animals use them for dinner. In Bali a clear-shelled parasitic snail (left) — an undescribed species of the genus *Annulobalcis* — lays her eggs on a crinoid and survives by feeding on its tissue. Such parasites are not known to be fatal to the host.*







# SECURE EMBRACE



FISH, PSEUDANTHIAS SODANIPINNIS; CRINOID, GEYCORANTHUS BENNETTI

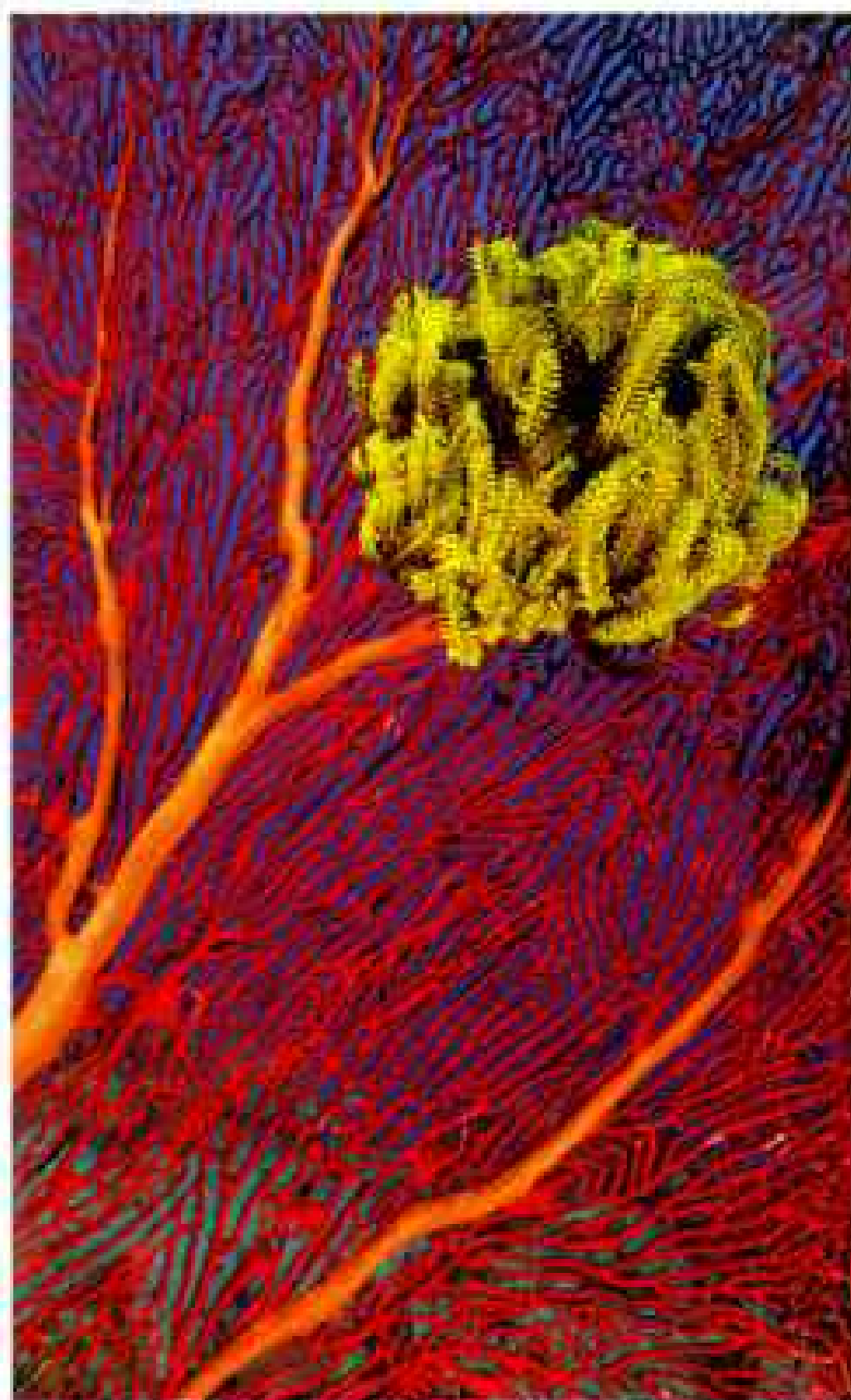
*Neon-hued lyretail fairy basslets dart into a feather star's arms—too finely meshed to admit large predators. Feather stars have as many as 200 pinnule-studded arms. Each pinnule sprouts dozens of tube feet, or podia, covered with sticky mucus that traps food and conveys it down grooves to the mouth. Podia also aid in respiration, absorbing oxygen from water.*

# CORAL BLOOMS

*Stuck like a lush corsage on a blouse of red fan coral, a feather star lolls and feeds (below). I found this crinoid in Kimbe Bay, Papua New Guinea, a place so rich in feather stars that several will cling to one tangled mass of sea whips (facing page).*

*Crinoids tend to congregate on prime real estate—the lips of tropical reefs, where slow, steady currents bring an endless buffet. As many as 40 or 50 crinoid species coexist on some Pacific reefs. That diversity brings myriad crinoid hitchhikers that lurk unseen, ready to surprise.*

*While pushing a white crinoid out of my way to prepare for a shot in Bali,*



CRINOID, FAMILY COMASTERIIDAE; CORAL, GENUS *SURGERGORGIA*



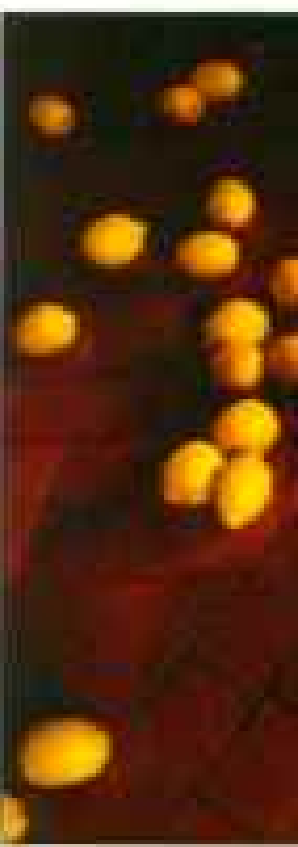
BORGONIAN, GENUS *CTENOCYLLA*; CRINOID, FAMILY COMASTERIIDAE (RIGHT); PIPEFISH, *SOLENOSTOMUS PARADOXUS*

*I found a barlequin ghost pipefish hanging snout down (above). Ghost pipefish appear to select color-matched feather stars as both hiding places and hunting grounds, feeding on small crustaceans and fish that dwell among the arms.*

*Touching a feather star calls for finesse. Their sticky brittle arms break apart easily. Despite their fragility, crinoids can quickly regrow damaged tissue and face no known threats from pollution.*

*Yet noted paleobiologist David Meyer reports declines among some species of feather stars in the Caribbean. "I've been working on crinoids for 30 years and haven't seen big fluctuations until now," he says. This lovely animal's future may hinge on solving this new mystery.* □





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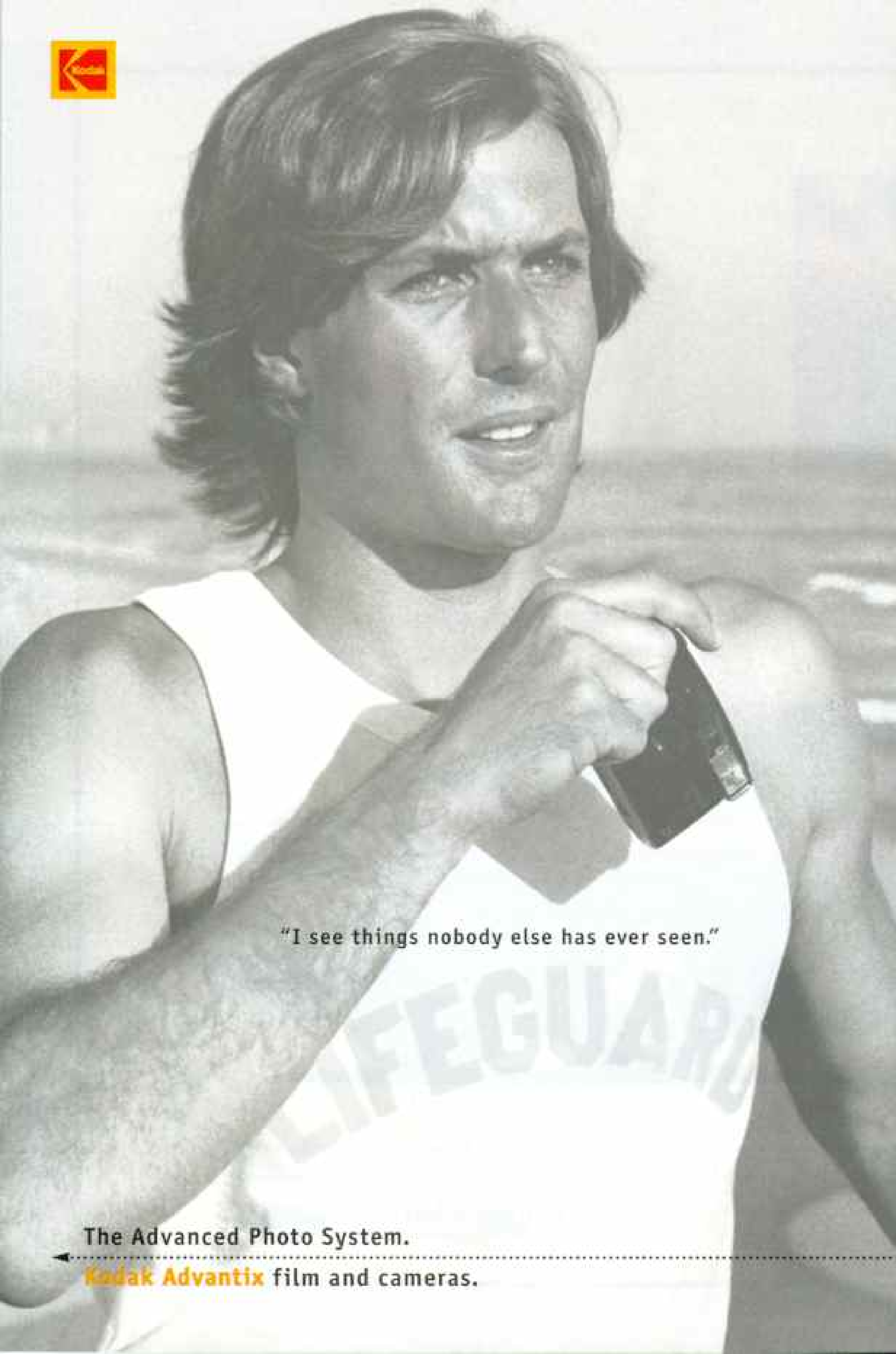
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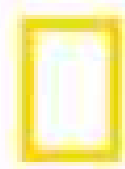


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DECEMBER 1996



2 **Genghis Khan** *Revered founder of Mongolia, this ruthless 13th-century warrior launched an empire that reached to Europe.*

BY MIKE EDWARDS PHOTOGRAPHS BY JAMES L. STANFIELD

■ *Double Map Supplement: The Mongol Empire*

38 **The Shenandoah** *Ripples of history and fishing tales run through a river and its placid Virginia valley.*

BY ANGUS PHILLIPS PHOTOGRAPHS BY VINCENT J. MUSE

58 **Believing Las Vegas** *Amid the neon dazzle, America's fastest growing metro area is on a roll.*

BY WILLIAM R. NEWCOTT PHOTOGRAPHS BY MARIA STENZEL

82 **Straight Up Ice** *Armed with axes, crampons, and a touch of madness, climbers dare frozen waterfalls and Alpine glaciers.*

BY JON KRAKAUER

96 **Reinventing Berlin** *The Wall gone, the reunited city prepares to resume its historic role as Germany's capital.*

BY PETER ROSS RANGE PHOTOGRAPHS BY GERD LUDWIG

118 **Feather Star Crinoids** *Delicate as flowers, these tenacious sea animals provide shelter for myriad smaller creatures.*

ARTICLE AND PHOTOGRAPHS BY FRED BAVENDAM

## Departments

Behind the Scenes  
Forum  
Geographica

Key to 1996  
Flashback  
On Television  
Earth Almanac  
On Assignment

## The Cover

*A bronze plaque in the heart of Mongolia honors the leader who unified tribes and set off on earth-shaking conquests. Photograph by James L. Stanfield*

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Middle row: Judy Bebluar, San Francisco, California; Thomas Pirton, Bronx, New York; Barbara Garrison, San Diego, California.

Front row: Maureen White, Haverhill, Massachusetts. Absent: Hood Frazier, Charlottesville, Virginia.

The Good Neighbor Award was developed in cooperation with the National Council of Teachers of English.



# Behind the Scenes

## Brand Loyalty

COWBOYS at the Big Bar Guest Ranch in Clinton, British Columbia, like to shock guests by sizzling a wrangler's pants with a red-hot branding iron. Onlookers soon learn that his behind is protected—with two copies of the GEOGRAPHIC slipped inside his jeans; then everyone wants a brand. Associate Editor Betsy Moize, a recent guest, has jeans that attest to the heat-repelling qualities of our paper stock.



MARK THIESEN (LEFT), GORDON WILTSIE

## Where There's a Will, There's a Way

HE HAS BRAVED HARD TRAVEL to the North and South Poles, but is he ready for Washington? Will Steger answers, "For the most part." This fall he became our inaugural explorer-in-residence. Will and Arctic-education specialist Barbara Horlbeck (above) arrived at headquarters in September.

One of their projects is the first transmission of real-time sound and images from the North Pole, which Will hopes to employ on an expedition next summer, traveling there alone by canoe-sled.



## Get Your Teeth Into This

GROWING UP in Jamaica, Garfield Minott was fascinated by local lizards. His boyhood interest has only gotten bigger. The 29-year-old Toronto paleoartist sculpted *Carcharodontosaurus* based on the skull found in Morocco by paleontologist Paul Sereno, a Society grantee. Last summer Garfield's dinosaur head fascinated visitors at our Explorers Hall in Washington, D.C. He was recently asked to design a "sexier" goalie's mask for hockey players. "It looks," he says happily, "a bit like a dinosaur."

PETER KROGH



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## Legendary Writing

WE DON'T CALL them "captions." Here at the GEOGRAPHIC, the words that run with the pictures have long been known as "legends," a term borrowed from map notes.

Legends are short prose with a tall job: to address photographs in a brief, clear way, while imparting additional information—without cannibalizing copy from the accompanying article.

We're better at it now than we were in 1935 (below). These days, legend writers adhere to the motto "Brevity. Clarity. Bite," distilling the essence of every story into a few allotted lines appearing with photographs, maps, or illustrations.

"Think of legends as a performing art," our new writers are told. "They make complicated subjects seem simple and difficult concepts easy to grasp. Their language is precise, forceful, and efficient. They seem the most natural thing to say. They look easy. We know better."

### COMING THROUGH THE RYE—IN ETHIOPIA

But it's really millet, not rye. The young Rachels who balance the water jars on their heads belong to the Galla tribe.

(From the September 1935 issue)



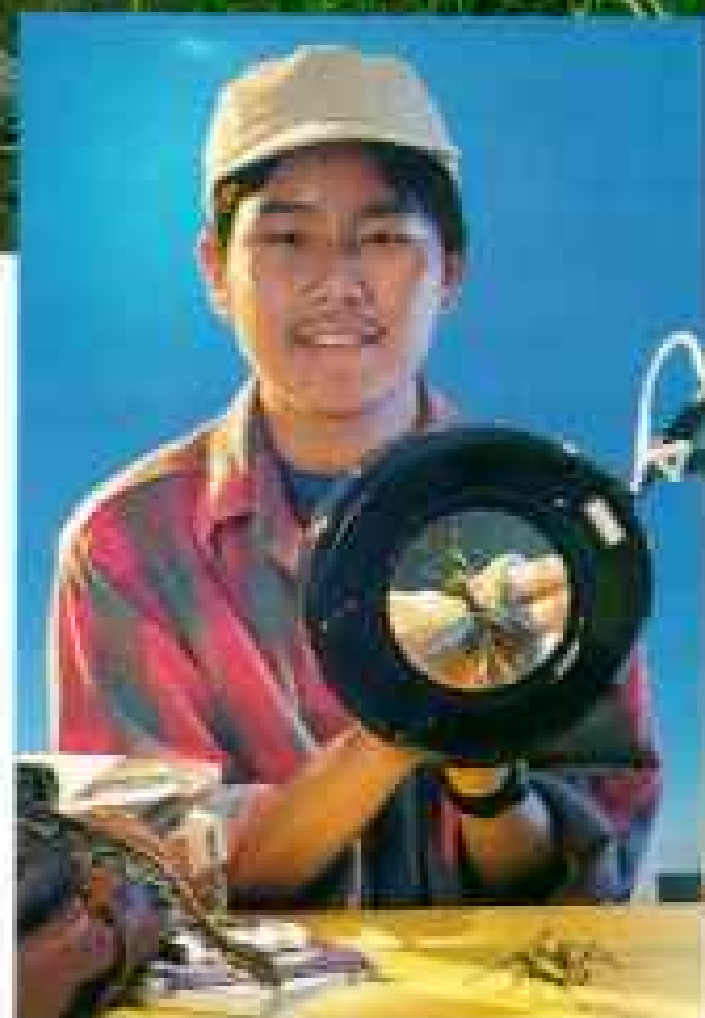
## Kids' Hall of Fame

HE WANTED TO SAVE the rain forest, but his parents said it might be too big a job. So 11-year-old Jason Phillips (above) of Palmer Lake, Colorado, is helping to save the lake his town was named for instead. His speeches and fund-raising projects have contributed thousands of dollars

toward the lake's rejuvenation.

Though just 15, James Fujita (above) has spent the past 12 years enthralled by bugs. Now an expert, he gives lectures in southern California; he even discovered a new species of cricket in the local strawberry fields. These boys are two of six grand-prize winners selected for their accomplishments by National Geographic WORLD magazine and

Pizza Hut to become members of the Kids' Hall of Fame. Prizes include a trip to Washington, D.C., and a \$10,000 scholarship.

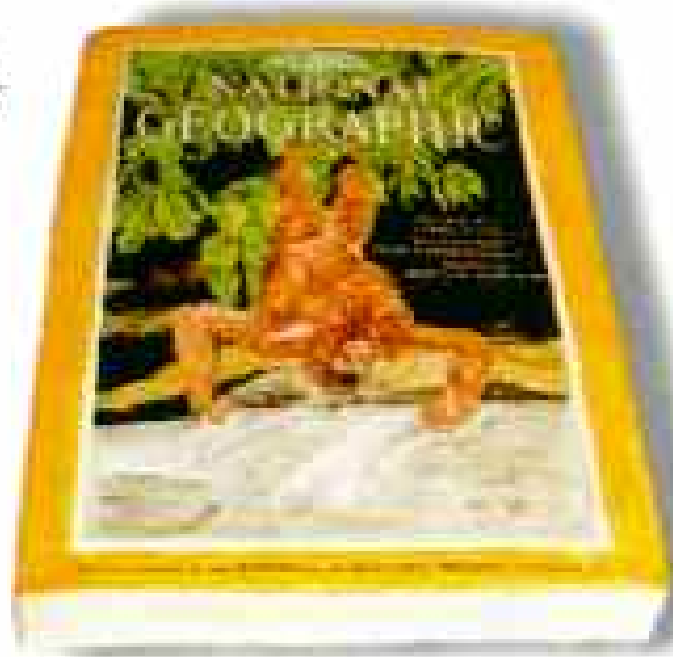


TOP: STACEY STUPEL; JAN. B. HOWARD

## We're the Frosting on the Cake

JOSH LOEB of London devours his GEOGRAPHIC when it arrives every month. It was only appropriate that he did so literally to celebrate his bar mitzvah in May. This cake, decorated with a scene from our December 1994 issue, enchanted the 13-year-old, an avid photographer. "It's my favorite magazine," he says. Especially when it's chocolate.

—MAGGIE ZACKOWITZ



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# Forum

*Our August issue, which was devoted entirely to Mexico, elicited a strong reaction from many readers. "You have described us as we are," wrote one Mexican-American. Another called the coverage "so real, so painful, so brutally truthful." A few members accused us of misinforming the public "with lies, propaganda, and distorted facts." And while several people considered a single-subject issue "monotonous," many appreciated it as a "great resource guide" and a "thoughtful and thorough overview."*

## Mexico

Your special report barely mentions the overwhelming population problem, but it was graphically evident in the panorama of grim human warrens of vast Mexico City. The nation's well-supported family-planning services brought impressive initial success, reducing the average number of children per woman from 6.4 to 3.2 in some 25 years. Further reduction is proving more difficult.

CHARLES R. ROSS  
Corvallis, Oregon

The single most important feature of the population is that of these 95 million people one-third are under 15 years of age. When this cohort reaches reproductive age, the social, economic, and environmental consequences will make the present "troubled" era seem like paradise lost.

JOSEPH W. GOLDZIEHER  
San Antonio, Texas

Thank you for explaining and reporting on the triumphs and tragedies of my parents' motherland. In these times of immigrant bashing (specifically bashing of Mexican immigrants), it is nice to see an unbiased report on Mexico. My parents came to the U.S. looking for opportunity and a better way of life. Their inspiration and struggles have motivated me to succeed in high school, the Marine Corps, and now in college.

FERNANDO MARTINEZ  
San Antonio, Texas

As a veteran traveler to Mexico, I believe you captured much of its charm and beauty. The main reason that it has not achieved its goal of becoming an economic power is political corruption. Once Mexico broadens its political and economic base, the sky will be the limit. After talking to many people there, I believe that the Mexicans are committed to achieving their goals through the ballot box, which is encouraging for them and us.

BRUCE HEYMER  
Willmar, Minnesota



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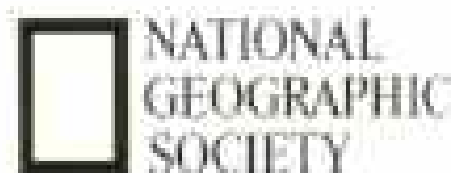
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**Japanese Macaque** (*Macaca fuscata*) **Size:** Head and body length, male, 88-95 cm; female, 79-84 cm. **Weight:** Male, 10-14 kg; female, 8-10 kg. **Habitat:** Coastal to alpine terrain in Japan. **Surviving number:** Estimated at 35,000-50,000. **Photographed by Tetsuo Kitoshita.**



# WILDLIFE AS CANON SEES IT

A Japanese macaque and her offspring huddle together for warmth against blustery winds. Living farther north than any other non-human primates, these “snow monkeys” are known to seek respite from the rigorous winters by sitting in hot springs that abound in the area. Another macaque population in a southern coastal region developed the behavioral trait of washing their food in the sea — a trait

which has passed on from one generation to the next. The macaques, Japan’s only primate species, have adapted to change for centuries, but are becoming increasingly vulnerable due to a shrinking habitat. As a global corporation committed to social and environmental concerns, we join in worldwide efforts to promote greater awareness of endangered species for the benefit of future generations.

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Touching the ticklish subject of corruption, you have to become philosophical and accept it as an added tax. As Alan Riding says in his book *Vecinos Distantes (Distant Neighbors)*, corruption (*la mordida*: the bite) is the glue that holds government together and the oil that lubricates its different parts. Without *la mordida*, practically nothing moves. The sad part comes when you do not have the money to pay this "added tax."

ENRIQUE AGUILAR

*Charlton Heights, West Virginia*

Why should Mexicans clean up their corrupt government when they can take the easy way out by coming here to exploit the goodwill Americans provide through their tax dollars? There are poor, hungry people in need of some press coverage all over this country—in the potato fields of northern Maine, the hills of the Appalachians, the swamps of the South, and the streets of Detroit—and they are all legal citizens of this country. Why don't you do a story on them?

DONALD M. FAXON

*Temecula, California*

I see no reason for the American citizen to tolerate or be obliged to support the illegal influx of people who can't handle their problems at home. Illegal immigrants should be sent home with a stern warning to stay there or else. Over the past years my own west Los Angeles neighborhood has deteriorated from the infiltration of illegal immigrants and their drain on public services. And in case anyone is interested, three of my four grandparents came from Mexico—legally—and just as legally prospered.

DANIEL R. GÁLVEZ

*Los Angeles, California*

While we Americans scorn wetbacks and cast suspicious glances at clearly ethnic men gathered in front of convenience stores and along boulevards in so many of our cities and towns, we have no qualms about the low-cost foodstuffs harvested by their hands or the profits garnered by land and factory owners from their labors. We trust them to care for our children and our grandparents. We rely on them to tend our yards, recycle our castoffs, and perform a thousand other jobs no native-born American will accept. What hypocrisy! We have two choices: Pay the high prices for goods and services necessary to support our own domestic labor force or accept the fact that we need the immigrants, even illegal ones, to do our work.

STEPHEN TOLLEFSON

*Guerneville, California*

What is important is your observation of the values of the Mexican people, the family, human relationships, the will to work. However, the question for Mexico is: Are these values worth a cent? Are they enough to survive, feed, and ensure the future of such a large nation? I do not know. All I know is that the daily forcing of my smile on this side of the Atlantic keeps pushing me to go back home to be simply me.

ALFONSO RIVERA

*Niederrohrdorf, Switzerland*



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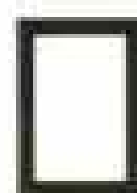
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 **NATIONAL GEOGRAPHIC SOCIETY**

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It is my opinion that the Mexican obsession with family is one of the greatest obstacles to progress. With 300 or more members, the extended family can be a massive burden. In small privately owned businesses, which abound in Mexico City, the owner has to fulfill his obligations to his family by providing jobs. One small body shop here does a good business and could provide a decent living for the owner, his son, and two others. Instead it has 17 employees, all family whom the owner was obligated to hire, with the result that no one makes a decent living, the owner cannot expand, and his own family is living just above the poverty level. In a huge family-owned conglomerate, a nonfamily member may get employment, but forget about moving up into middle and upper managerial levels because those belong to family members.

DONALD M. MILLER  
Mexico City, Federal District

While the minimum wage in Mexico works out to roughly \$135 a month tax free, only a small percentage of families have such a meager income. Many have more than one working member. Besides, the poor people are heavily subsidized, paying a few dollars a month for electricity and water; bus rides are about 15 cents; education even at university level is free for the poor. A kilo (2.2 pounds) of tortillas costs 21 cents. More than half the population is covered by social security and gets free medical care including medicines. The American media have been presenting the worst side of Mexico. This is unfair to the majority of Mexicans who are hardworking, well-educated, and have a standard of living similar to the American average, although on a smaller dollar income.

FERNANDO OCHOA CHÁVEZ  
Guadalajara, Jalisco

Your issue did not mention the American influence. During my last visit, it was common for people to mix languages. Even street graffiti read, for instance, "Wolf's ley [law]" and "Peace and love *ahora* [now]." The Mexican government actually began a campaign to save its language. I was told that television networks were instructed to stop mixing so much English into their scripts.

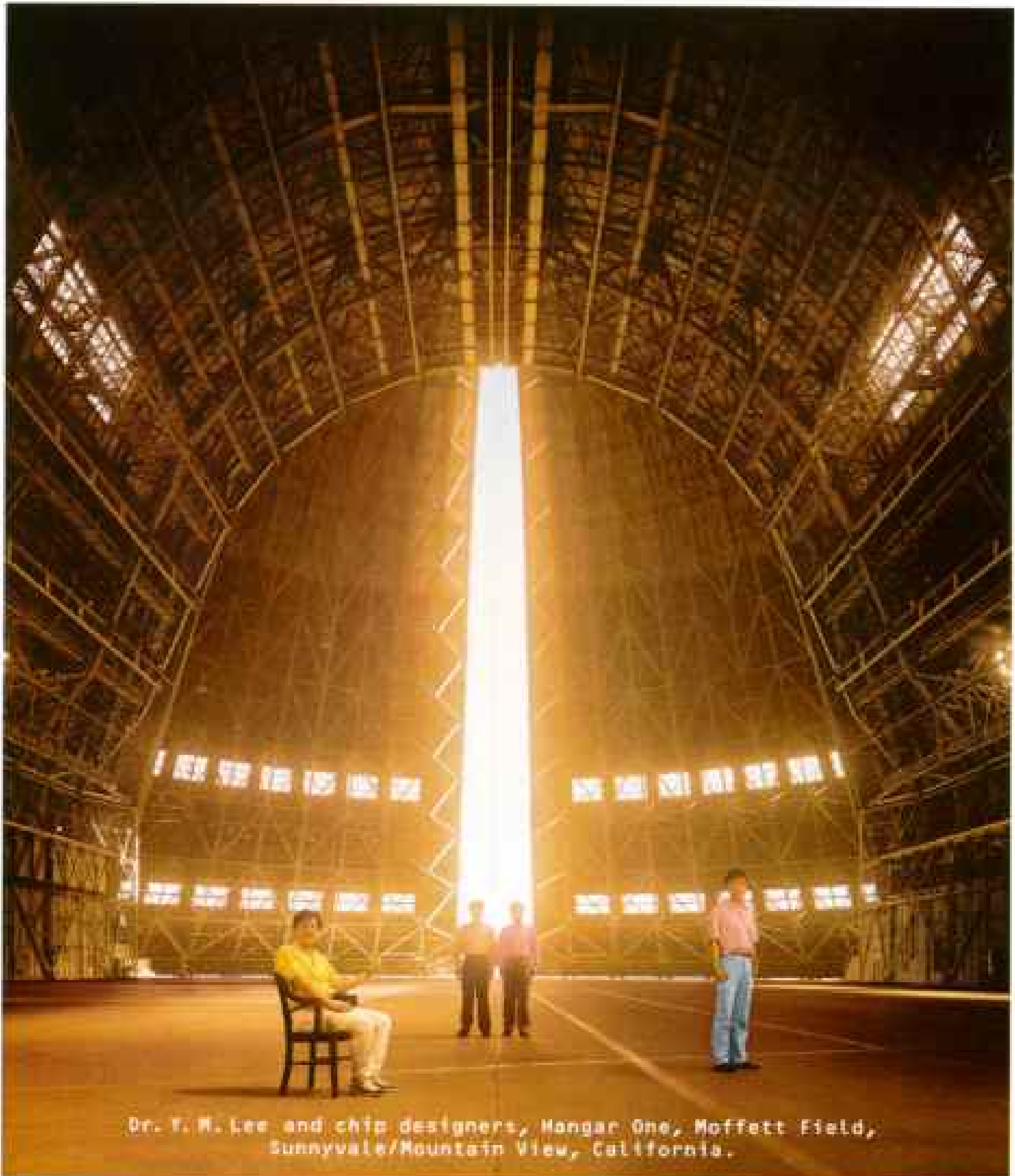
LAWRENCE F. LIHOST  
Madera, California

In Europe we do not know much about the circumstances of life in Mexico, and for most Germans it is too expensive to vacation there. The most astonishing picture for me was on pages 100-101. I couldn't believe what I saw—a wall between two democratic states! Until now I thought this would only be possible at the border of communist states. Since 1989, when the Wall in Berlin fell, everybody in Germany has been lucky not to see things like that anymore. The rusty steel pilings at Playas de Tijuana are not good publicity for a democratic state—and a world power like the United States.

EDGAR H. SCHARDT  
Nürnberg, Germany



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Very little was said about the natural forces of drought, typhoons, and volcanic or seismic hazards that could make Mexico's emergence much more difficult. A map or photo showing how close large urban areas are to active geologic faults and volcanoes would have gotten this point across.

RODERICK A. HUTCHINSON  
*Yellowstone National Park, Wyoming*

The picture of the *charros* (pages 78-9) does not show the horse falling suddenly to the ground, possibly with a broken or sprained leg. These poor animals are frequently terribly injured and left to lie in agonizing pain. This "sport," called horse tripping, has been banned at *charrerías* in California because of its cruelty.

DEANNA R. KUHN  
*Alexandria, Virginia*

All the world's tequila comes from the agave cactus grown in and near Jalisco. To do a story on Mexico and not mention this is like doing a profile of Louisiana and leaving out crawfish and Cajun music.

RON SMITH  
*Richmond, Virginia*

I wish you had shown the other part of Mexico: the well-educated who number in the millions, the modern cities, highly recognized universities, great highways, industrial parks, shopping malls, mining industry, and many other good things.

OSCAR STEGER ENRIQUEZ  
*Chihuahua, Chihuahua*

This issue really shows the contrast in Mexico from poor to wealthy. It provides a complete picture of the opportunities that Mexico has in the future. It proves the point that northern Mexico is always doing better in its economy than the southern areas.

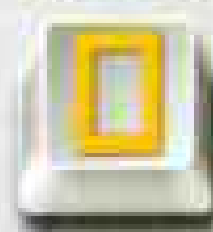
MARCO A. BARROS  
*San Antonio, Texas*

I enjoyed the view of Mexico through your foreign eyes. As a native, I think Mexico is a country of enchantment, surprises, and contrasts. It is both amusing and sad that while in some regions we are thrusting into the 21st century, in many others we have not even left the 16th century.

EDUARDO CANALES ZAMBRANO  
*García García, Nuevo León*

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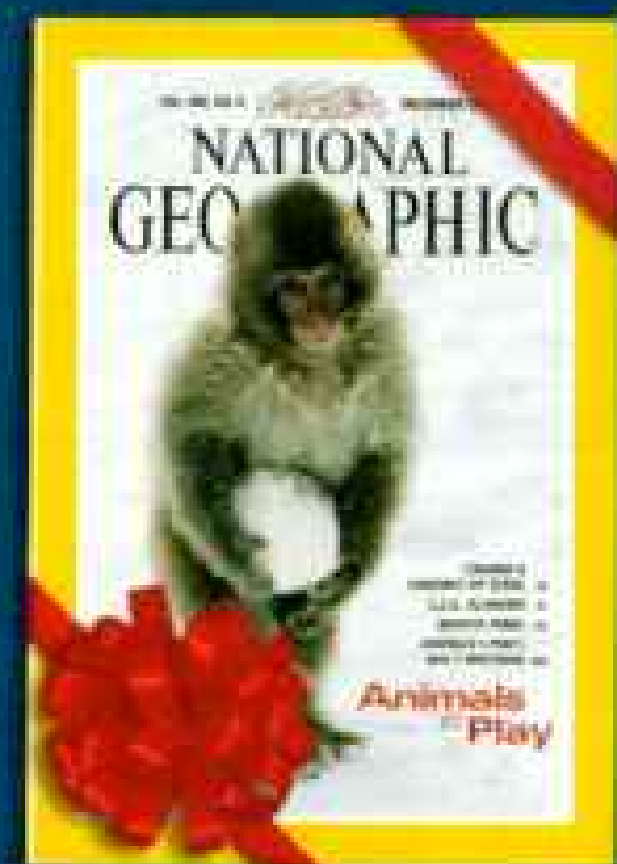




*ANIMALS AT PLAY. A young Japanese macaque totes a snowball he's made. The adults of the species don't make their own snowballs, but they have been known to play with the ones made by the young. And remarkably, even though the making of snowballs is quite common, nobody has ever reported seeing a macaque actually throw one.*

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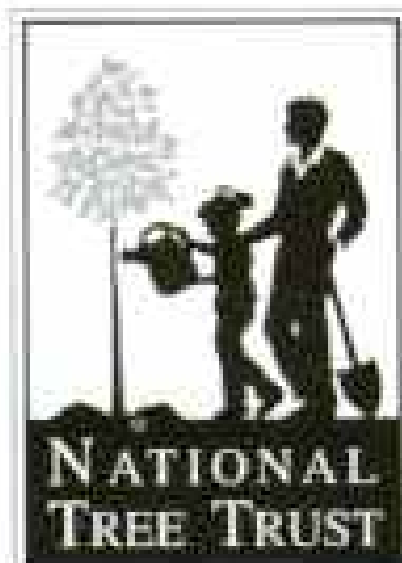
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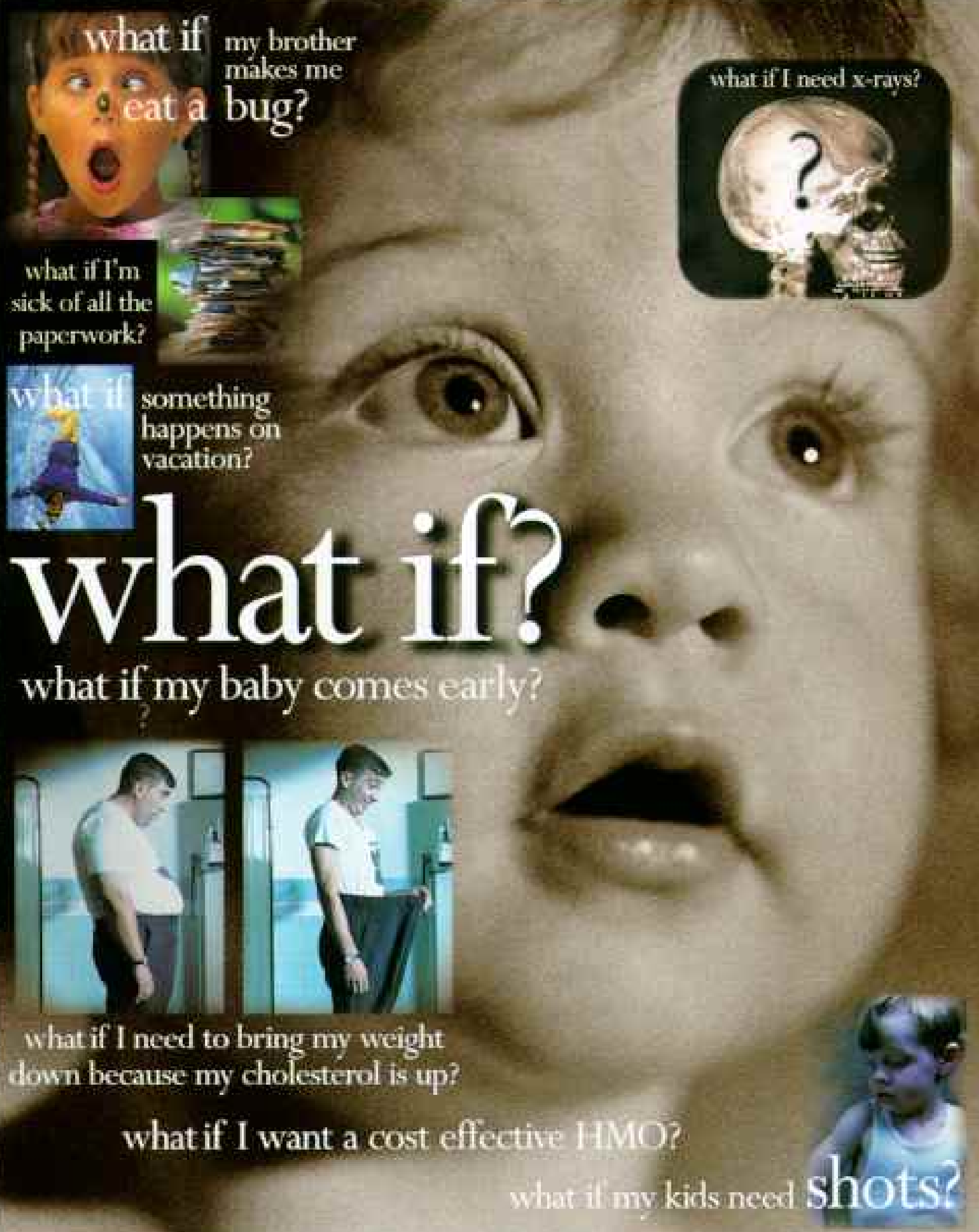
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happens on  
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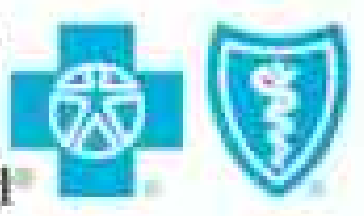
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# Geographica

## Hurricane Proves Surprising Boon for Art, Science

WHEN Hurricane Andrew wreaked havoc with lives and property in South Florida in 1992 (GEOGRAPHIC, April 1993), it also destroyed 1,200 trees, many of them rare, at the Fairchild Tropical Garden. On the theory that if you break an egg, you make an omelette, the Coral Gables facility fashioned something positive out of the chaos.

The garden salvaged many downed trees (below) and invited local artists to use the wood to create works for an exhibit aptly titled

"Harvest the Wind," now at the garden. Artist Stephen Althouse calls his piece "Lysiloma Latisiliquum" (above), the Latin name for the wild tamarind that he used in his sculpture, along with white pine.

Scientists found the storm "a godsend, a once-in-a-lifetime opportunity," says Jack Fisher, Fairchild's research director. He opened palm buds to count leaves, which would kill a living tree. Others examined exposed roots and studied beetles in storm-damaged bark. Concern over the survival of a Fairchild palm, the only known member of its species, inspired the successful search for new specimens in its native Haiti. "We felt guilty having so much fun when the area was so devastated," says Fisher.



BRIAN SMITH (TOP); WILL HOUGHTON, FAIRCHILD TROPICAL GARDEN



## Jade Jewelry Signals Tomb of a Maya Lord

THE MAYA RULER of La Milpa went to his grave bearing a sign of his high rank: a jade necklace of carved beads with a pendant in the form of a vulture head (below).

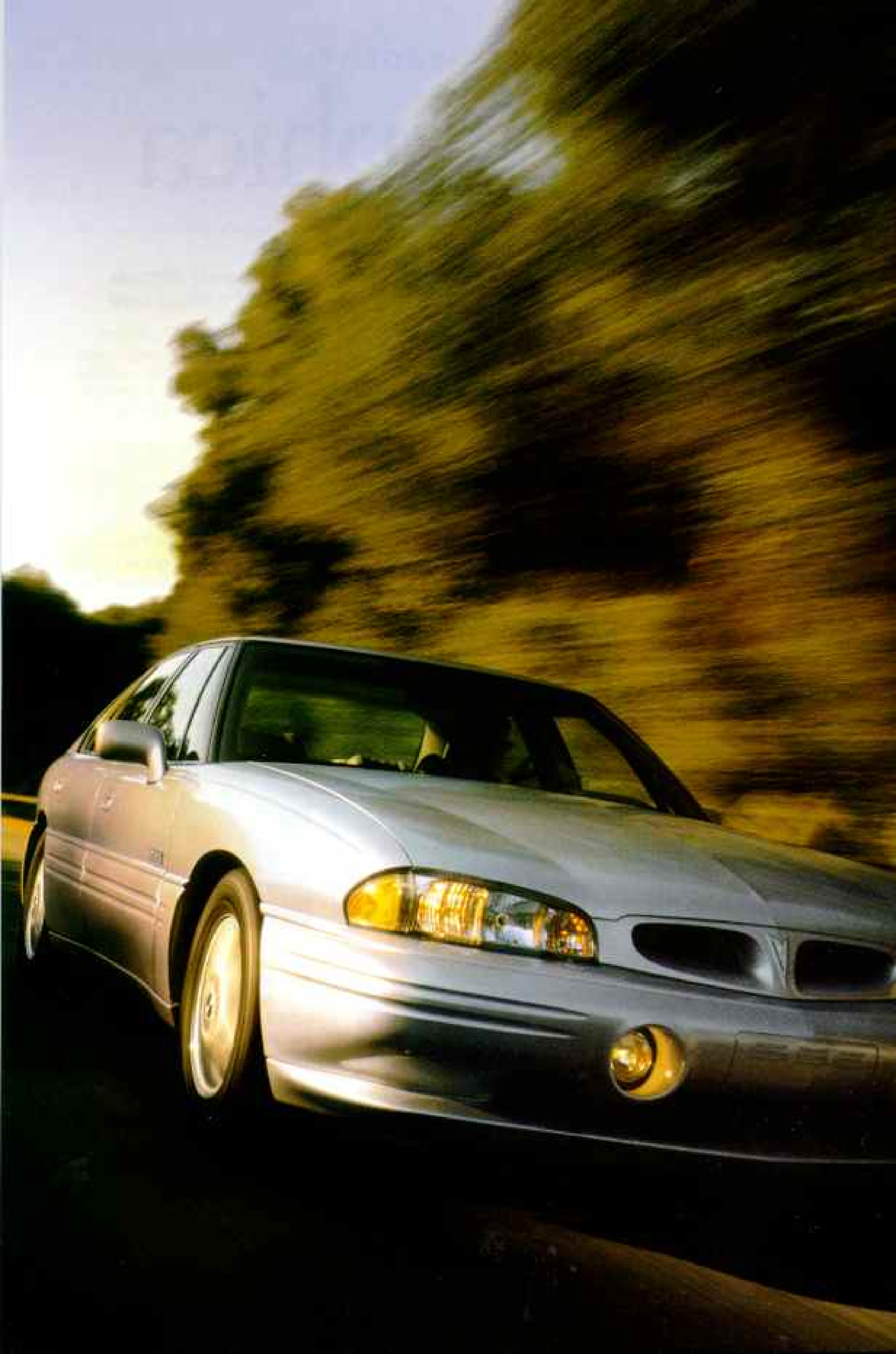
"These are first-class pieces of Maya lapidary art," says Boston University archaeologist Norman Hammond, who has worked at La Milpa in Belize since 1992 with Society support. This year he found skeletal remains of the ruler in a chamber the size of a



NORMAN HAMMOND

small car, hollowed out of rock beneath La Milpa's central plaza. Obsidian ear spools lay near the ruler's feet, a jade bead plugged his mouth. But the chamber yielded no inscriptions to identify the occupant.

When the middle-aged ruler died about A.D. 450, La Milpa was "a fading bush-league town," Hammond says. The city had neither the will nor the manpower to raise a monumental pyramid like the five erected by other rulers. As a result, looters who plundered the site missed this tomb.



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## Into the Salt Mine to Save Works of Art

FOR MORE THAN 700 years Polish workers have excavated salt from the Wieliczka mine near Kraków. In the 17th century, miners began to sculpt the rock salt, eventually creating galleries filled with the figures of saints and rulers, miners and heroes. The artistry reached its apex in the magnificent 331-foot-deep Princess Kinga's

Chapel (above), where one wall bears a relief of the Holy Family (lower right), and even the teardrops in the chandeliers are made from rock salt. For centuries the Wieliczka mine has drawn tourists, and in 1978 it earned a slot on UNESCO's World Heritage List.

But for decades many statues—especially in St. Anthony's Chapel—have been dissolving. In a yearlong U.S.-Polish project, researchers recorded the



TOMASZ TOMASZEWSKI (ALL)

mine's temperature, humidity, and air flow. They found the cause of the deterioration: warm, humid air entering through ventilation shafts. Pollution adds to the problem, lowering the humidity level at which salt normally dissolves.

A giant air cooler and dehumidifier is now being installed. Scientists like Jadwiga Stecka (top, at right) will monitor the mine, helping to preserve this priceless salt art.

## African Termites Guide Way to Gold

AFTER A VILLAGER in Niger found rocks that held gold in 1984, fortune seekers descended on the barren region. So did international gold-mining companies. But where should they dig?

Canadian geologist Chris Gleeson, a consultant for mineral exploration, spotted hundreds of termite mounds, some six feet high and six feet in diameter, in the Koma Bangou area. Recalling tales that ancient African civilizations used mounds to locate gold deposits, he sampled the hills.

Termites there burrow as deep as 250 feet to find water.

Whatever they encounter, including gold, comes up. Mounds grow until colonies die off—leaving the gold behind.

Most of the Koma Bangou mounds produced no traces of the precious yellow stuff, but some did. "Any mound with any gold had gold all through it," says Gleeson. His findings guided a firm called Etruscan Enterprises, which has been drilling near the gold-laden mounds to learn if commercial mining is economically feasible. If so, production could begin by 1998, says Donald Burton, the firm's head of exploration, who calls Gleeson's study "termite geochemistry."

—BORIS WEINTRAUB



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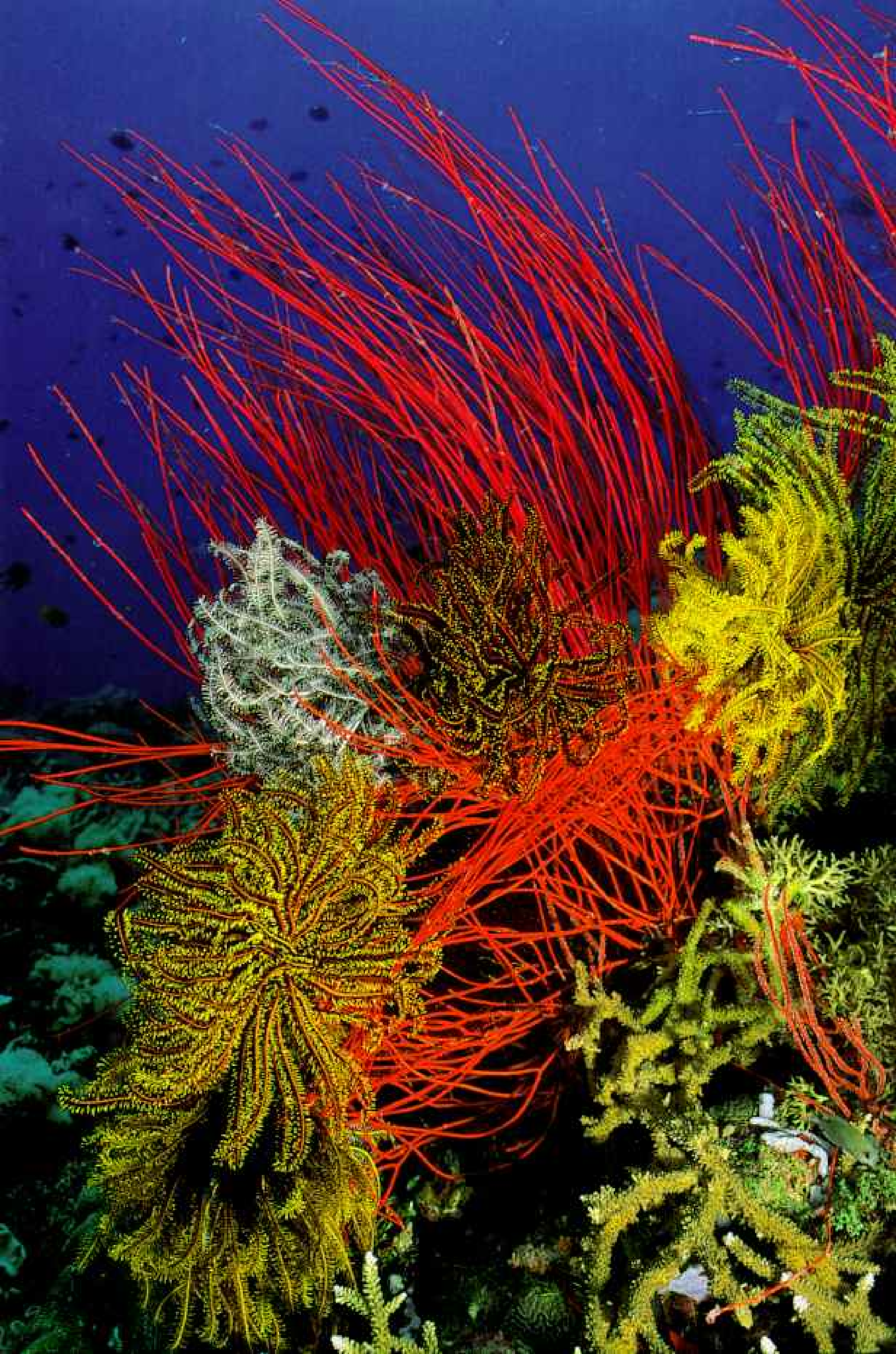
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## JANUARY

Neandertals 2  
The Fitzgerald Wreck 36  
Utah 48  
Arctic Traverse 78  
Feast of the Tarpon 90  
Center of the Earth 100  
Puffins 112

## FEBRUARY

Irian Jaya 2  
People of the Trees 34  
Tex-Mex Border 44  
Glaciers 70  
Thailand 82  
Our Polluted Runoff 106  
In Focus: The Caucasus 126  
Map: Indonesia

## MARCH

Xinjiang 2  
Xinjiang Mummies 44  
Emperor Penguins 52  
Hudson River 72  
The Dawn of Humans 96  
Macedonia 118

## APRIL

Jerusalem 2  
Trango Tower 32  
Buddhist Caves 52  
Trout 64  
The Anasazi 86  
A Century of Research and Exploration 110  
Aran Islands 118  
Map: Jerusalem

## MAY

Peru 2  
Antarctic Ice 36  
California Desert 54  
Monaco 80  
Dinosaur Eggs 96  
David Thompson 112

## JUNE

Cape York Peninsula 2  
Saltwater Crocodiles 34  
In Focus: Bosnia 48  
Peruvian Mummies 62  
Eritrea 82  
African Dinosaurs 106  
Toronto 120  
Map: Ontario

## JULY

South Africa Parks 2  
Olympics 42  
Gobi Desert  
Dinosaurs 70  
Silver Bank Wreck 90  
Syria 106

## AUGUST

Emerging Mexico: A Special Issue  
Emerging Mexico 2  
Mexico City 24  
Sierra Madre 44  
Monterrey 52  
Veracruz 62  
Heartland & the Pacific 70  
Tijuana & the Border 94  
Yucatán Peninsula 108  
Chiapas 114

## SEPTEMBER

Scotland 2  
Gaza 28  
Scythians 54  
Four Corners 80  
Tarantulas 98  
Fire Ecology 116

## OCTOBER

National Wildlife Refuges 2  
African Gold 36  
Kuril Islands 48  
China's Terra-cotta Warriors 68  
Life Without Light 86  
Morocco 98  
Baffin Island 126  
Map: Federal Lands

## NOVEMBER

Orbit 2  
Sir Joseph Banks 28  
Gibraltar 54  
Bowie Seamount 72  
Colorado's Front Range 80  
Portia Spiders 104  
Running the Shulluo River 116

## DECEMBER

Genghis Khan 2  
Shenandoah 38  
Las Vegas 58  
Ice Climbing 82  
Berlin 96  
Crinoids 118  
Map: Mongol Empire

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# FLASHBACK

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■ FROM THE GEOGRAPHIC ARCHIVES

## Standing Tall in the Land of Genghis Khan

During the first of five expeditions to Mongolia, Roy Chapman Andrews photographed this seven-foot-five-inch man in 1922 in the capital city of Ulaanbaatar—but that wasn't the explorer's biggest find. In an automobile caravan following the ancient routes of Genghis through the Gobi desert, Andrews' party discovered one of the world's richest dinosaur fossil fields, featured in the June 1933 and July 1996 issues of the *GEOGRAPHIC*.

"We ourselves are the 'trail-breakers' of motor transportation," wrote Andrews. "Instead of thrilling with pride at the thought, I reflected sadly that we were violating the sanctity of the desert and destroying the mystery of Mongolia."

This photograph was never published in the magazine.



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# On Television



■ SPECIAL, DECEMBER, NBC  
**Stalking the Elusive  
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HER SERENE GAZE masking her killing tools—four daggerlike canine teeth—this puma of Chile's Torres del Paine National Park was the object of filmmaker Hugh Miles's two-year quest: to earn the trust of a young New World lion he named Penny and document her struggle for survival.

Ruthlessly persecuted throughout the Americas, pumas—also called cougars, mountain lions, panthers, or catamounts—have sought

refuge in the remotest corners. Masters of concealment, they are seldom seen and have never before been filmed as extensively as in this National Geographic Special.

Following her as she patrols her territory, Miles brings home an intimate portrait of a magnificent carnivore, the golden ghost of the Andes.

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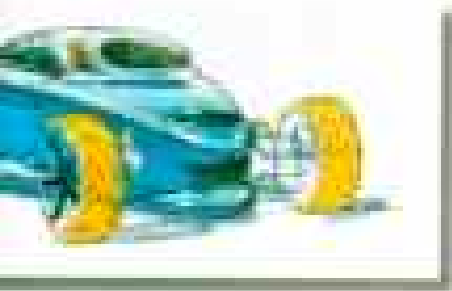


January 10, 1996:  
Wearing shades à la Jake  
and Elwood, Chrysler Chairman  
Bob Eaton and Bob Lutz  
wheel Prowler prototype into  
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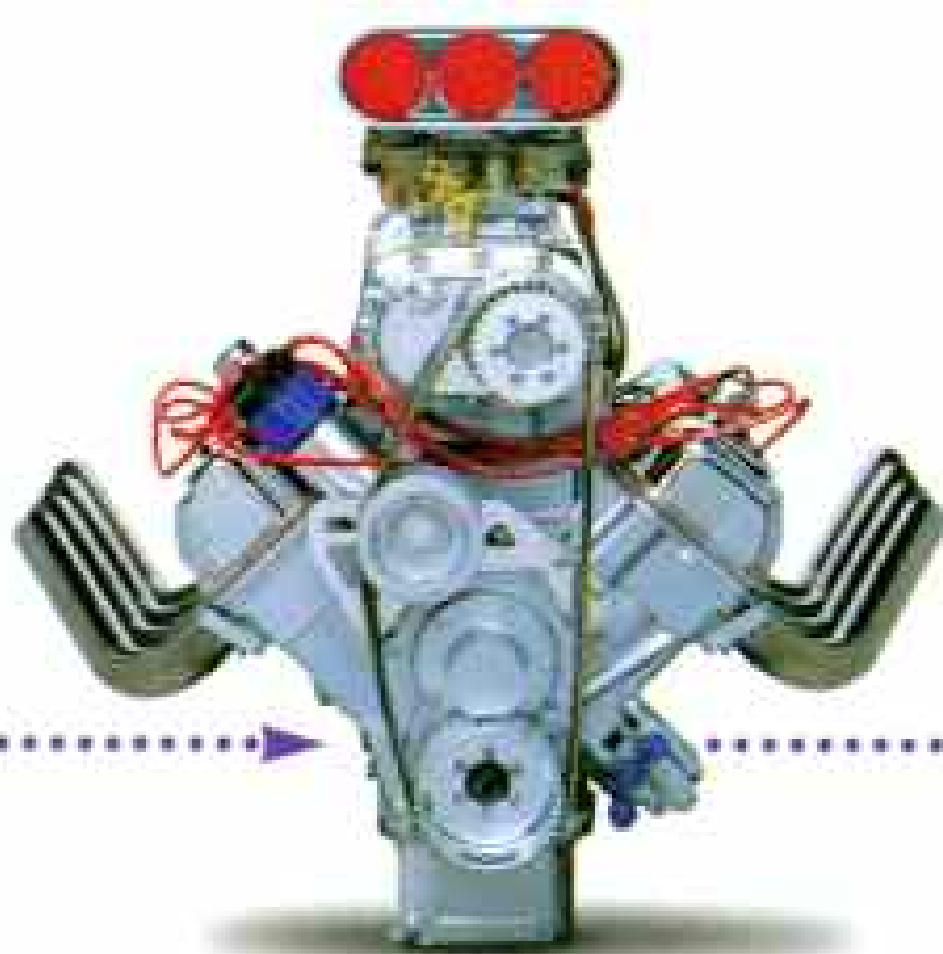
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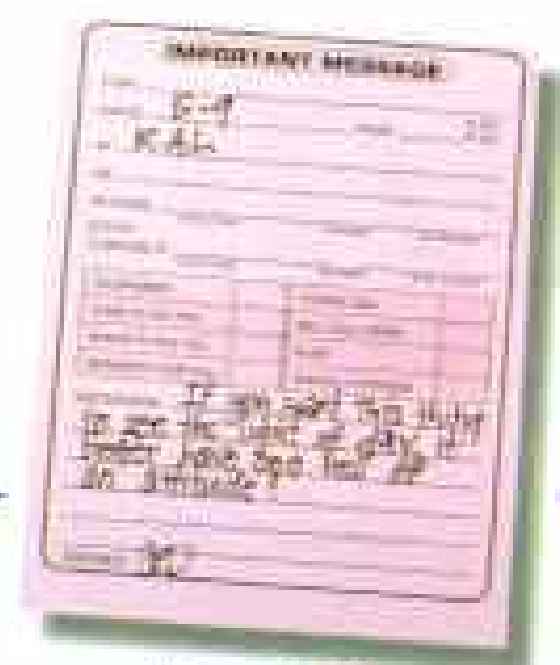




August 13, 1990:  
Designer walks into  
colleague's office  
with loose sketch of 21st  
century open-wheel  
roadster. That evening, a  
group gathers to discuss  
how it could be built.



September 18, 1990:  
Chrysler Design Chief Tom Gale starts  
work on his own custom street rod.



May 9, 1991:  
Chrysler top management gets  
wind of project. Message from President  
Bob Lutz: "If you want this to see the  
light of day, it better have one  
hell of an attitude."

May 20, 1991:  
Lutz is shown scale model of  
concept car. Grinning, he  
agrees with recommendation  
to build full-size version.  
Project is named "Prowler."



April 15, 1995:  
First prototype body parts,  
fabricated entirely from  
aluminum, are delivered.



January 7, 1993:  
Prowler show car  
draws huge crowds  
at Detroit Auto Shows,  
followed by  
impassioned pleas  
to put it into production.



May 10, 1992:  
Chrysler team travels to the  
NSRA Street Rod Nationals  
for research, inspiration,  
and rousing performance  
by Peter Noonan and  
Herman's Hermits.

your next car, truck, sport utility, or minivan. And  
sometimes we actually produce that heart-stopping  
design you saw up on the stand. It's what you do when  
great cars and trucks are what you're about.

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GREAT TRUCKS.**

**CHRYSLER CORPORATION**

# Earth Almanac



BY GALFUS BLEWIS, BRIAN GREBBY

## Now THIS Is a Fish Story

"FIRST APPEARANCE of the great sea-serpent," *Harper's Weekly* reported of an oarfish—responsible for many sea monster sightings—stranded in shallow Bermuda waters in 1860. Since then most oarfish have only been seen dead, washed ashore. They swim as deep as 600 feet, but in this rare photograph a ten-footer in the Bahamas rises nearly to the surface, perhaps to rest or feed.

Longest of the bony fish—some sharks are longer—oarfish normally measure 16 to 26 feet, though there is an anecdotal account of a 56-footer. Scientists once believed that the fish rotated their long ventral rays like oars, hence the name. Actually, the rays are clad in chemically sensitive skin that may help oarfish detect prey in the inky depths.



MICHAEL NICHOLS

## Fatal Epidemic Fells Gombe's Chimps

IN A GRIM EPILOGUE to our Jane Goodall article last December, disease has ravaged Mitumba, one of three chimp communities in Tanzania's Gombe National Park. Nine of Mitumba's 29 individuals have died, probably from pneumonia. The victims included this high-ranking female, Rafiki, and her 14-month-old twins, Roots and Shoots, featured in the December story. They were only the second known pair of twins born at the Gombe preserve, now home to about 150 chimps.

Though the infection appears to have run its course, field researchers at Gombe have another concern: warfare. The neighboring Kasakela group may be expanding its range into Mitumba territory, and the weakened Mitumba group could easily be wiped out by Kasakela males.



THE NIB IS

STILL SPLIT

BY HAND

USING A DISK

BARELY THICKER

THAN A

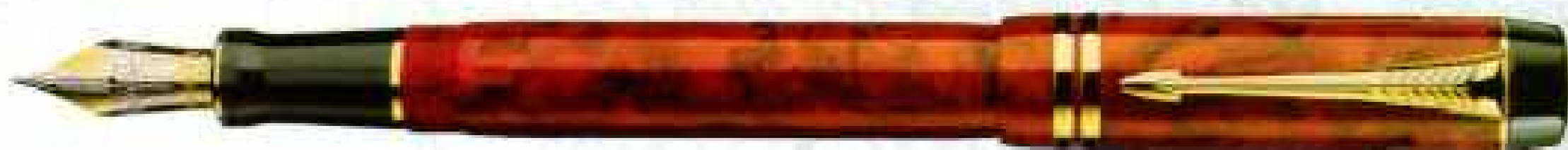
HUMAN HAIR.

*(AND YOU THOUGHT  
threading a needle  
WAS DIFFICULT.)*

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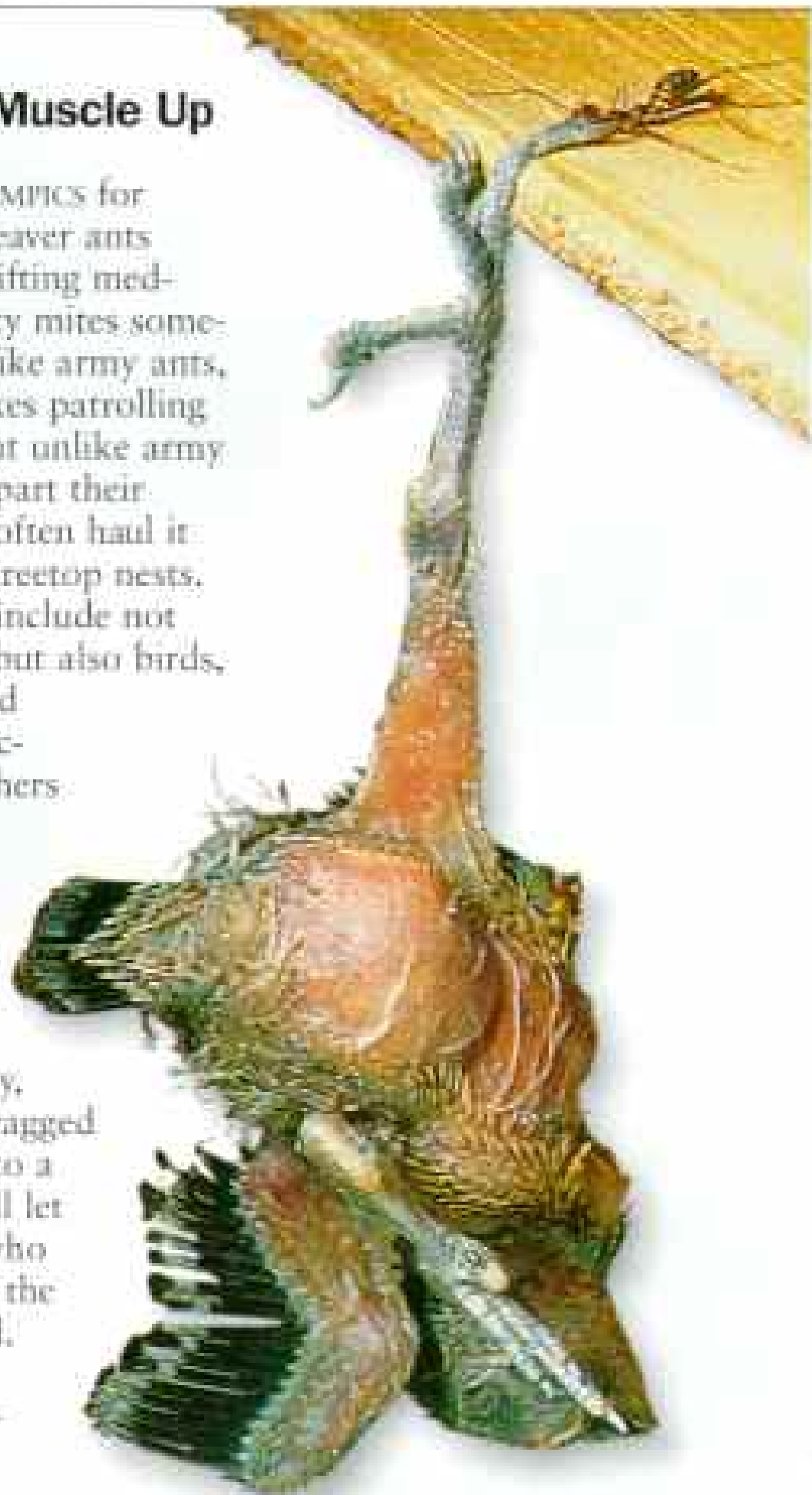
BARA HERRERA ZWITTOWI, & MOOSE PETERSON, WILDLIFE RESEARCH PHOTOGRAPHY

## Hopping Aboard the List

NUMBER 957 on the endangered species list, the California red-legged frog was designated as threatened last May. Because of development and exotic predators, the amphibian—at up to five inches, the largest native frog in the West—has vanished from 70 percent of its California range. A red-legged frog may have been Dan'l Webster, the star of Mark Twain's "Celebrated Jumping Frog of Calaveras County" in 1865. Why not a bullfrog? They weren't brought west to California until 1896 to supplant red-legged frogs that had been overharvested by market hunters.

## Weaver Ants Muscle Up

IF THERE WERE OLYMPICS for insects, African weaver ants would be weight-lifting medalists. These mighty mites sometimes hunt much like army ants, with huge phalanxes patrolling the forest floor. But unlike army ants, which tear apart their prey, weaver ants often haul it intact up to their treetop nests. And their victims include not only large insects but also birds, snakes, lizards, and small mammals, according to researchers Janusz Wojtusiak, Ewa Godzińska, and Alain Dejean. In his Cameroon field lab, where Dejean kept a free-ranging colony, several workers dragged this dead bird up to a shelf. Then they all let go—all but one, who weighs a 500th of the quarter-ounce bird. The tenacious ant clings with powerful sucker pads on its feet.



LORRIE GRAHAM, WILDLIFE PHOTO AGENCY (ABOVE); DECORPHYLE LONGINODA, ALAIN DEJEAN

## Virus Decimates Australia's Rabbits

MORE THAN 200 MILLION ravenous rabbits plague Australia. Introduced in 1859, the pests gobble native vegetation, crops, and livestock pastures, causing nearly 500 million dollars in losses each year. Recouping a drop in the bucket, hunters like

these have been killing millions of rabbits a year, exporting many to Europe as meat. But now hunters are losing their jobs to a far more efficient killer—rabbit calicivirus disease.

Endemic to China and Europe, the virus was being tested on rabbits on an island off South Australia when it escaped in October 1995. Researchers believe that insects may have bitten infected rabbits and then been carried by winds three miles to the mainland. Killing by blood coagulation in two days, the disease moved like wildfire. By June it had crossed the continent, killing up to 98

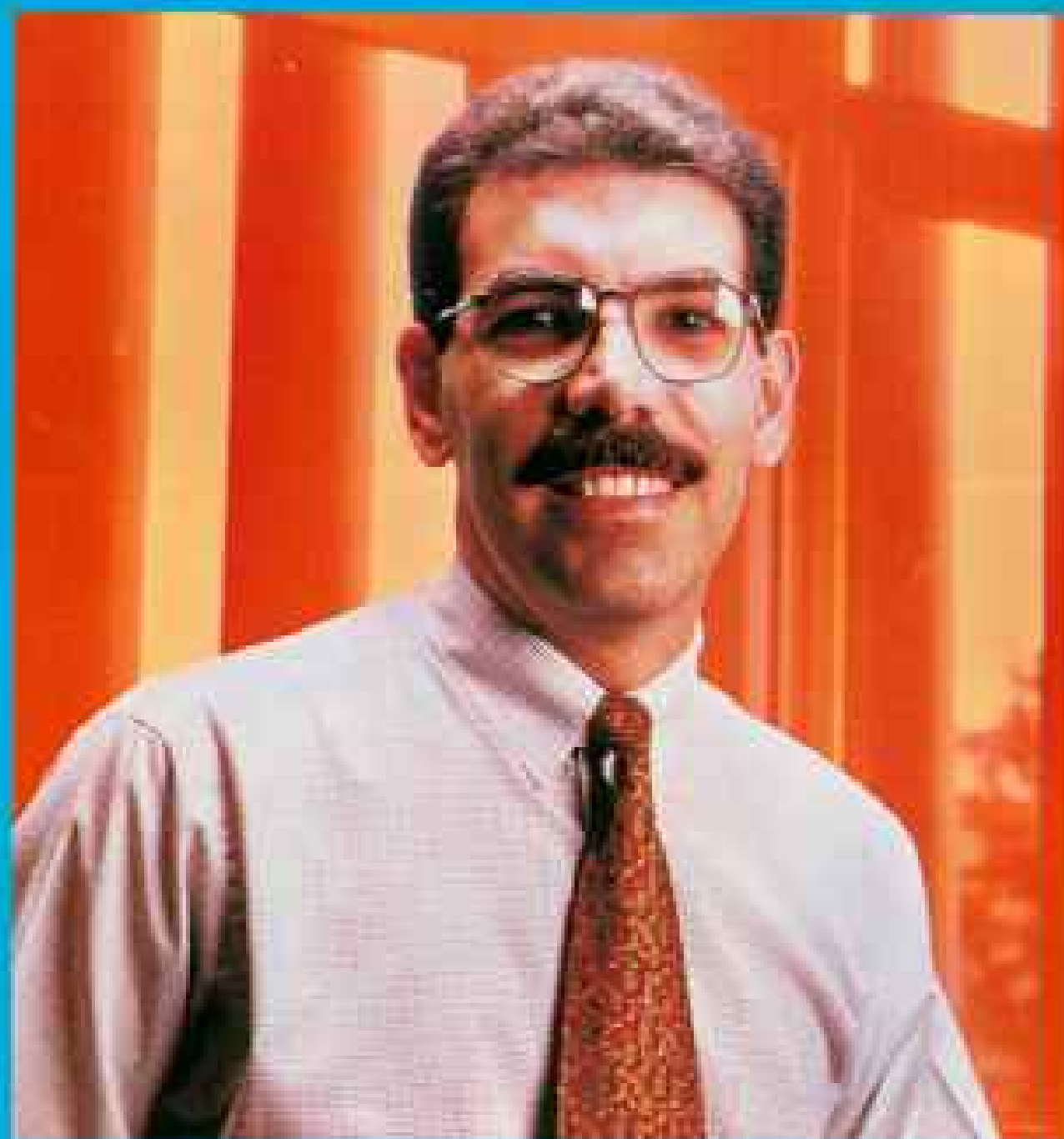
percent of the rabbits in areas infected. The government plans to release more of the deadly virus.

While farmers exult, biologists ponder the impact of the rabbits' decline. Birds of prey, foxes, and Aborigines who rely on traditional food sources will need to find alternatives.

—JOHN L. ELIOT

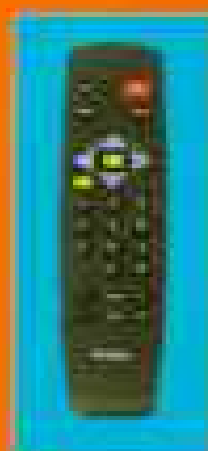


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Walter Duran, Product Manager, Colour TV for Latin America,  
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# On Assignment

## ■ BERLIN

### Wrapped Up in His Work

"NO, CHRISTO DIDN'T TIE ME UP!" laughs photographer Gerd Ludwig, speaking of the artist who in the summer of 1995 wrapped Berlin's Reichstag in shiny fabric as a temporary work of art. "If he had, I'd be very valuable and hanging in a museum right now." Instead a vendor on the Reichstag lawn similarly swaddled tourists, then took souvenir photos. "I had my seven-year-old son, Max, wrapped, and he looked so cute I thought I'd do it myself. There was magic in the air. Christo's art project really did change Berlin," says Gerd, a German who now lives in Los Angeles. "After the Wall came down, people still asked, 'Are you an Ossi? Are you a Wessi?' East or West German nationality still mattered. But after Christo, we were all just Berliners who had seen something wonderful. We were together."

## ■ SHENANDOAH

### Wading for the Perfect Shot

"THEY WEREN'T VERY RAPID RAPIDS," explains photographer Vince Musi, up to his knees in his subject on the Shenandoah's South Fork. Shooting wasn't so easy; last January heavy snows and flooding kept Vince in Luray, Virginia, for ten days. "I helped stranded motorists and ate hot dogs all week," he says. When the weather cleared, Vince got back to work, eventually canoeing almost the entire length of the Shenandoah—"and never once falling in." Vince, a Pennsylvania native, was a sports photographer at the *Pittsburgh Press* before moving to Washington in 1993.



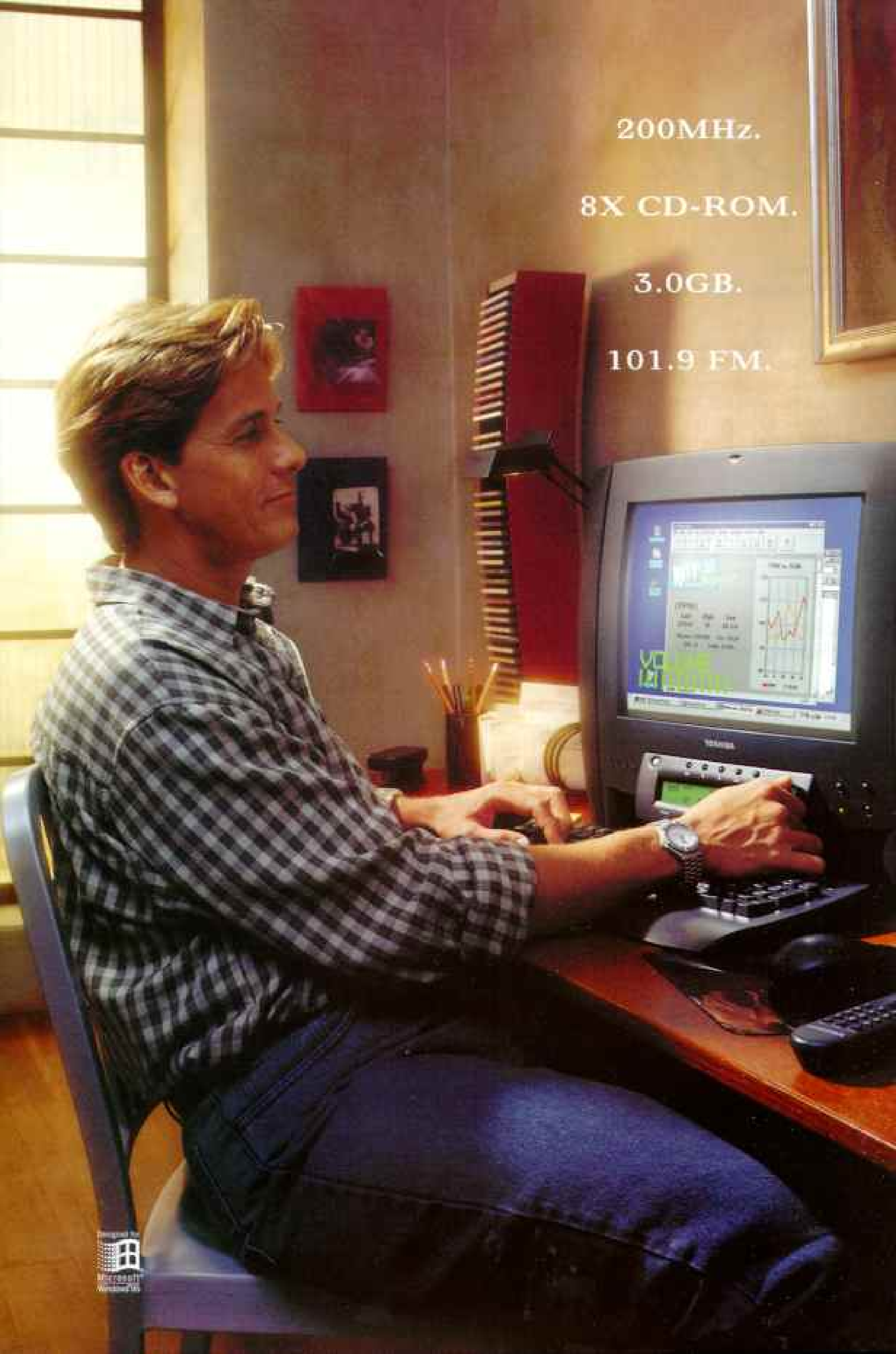
OLIVER ERUELHARTZ (TOP); MICHAEL SUTTORANI

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