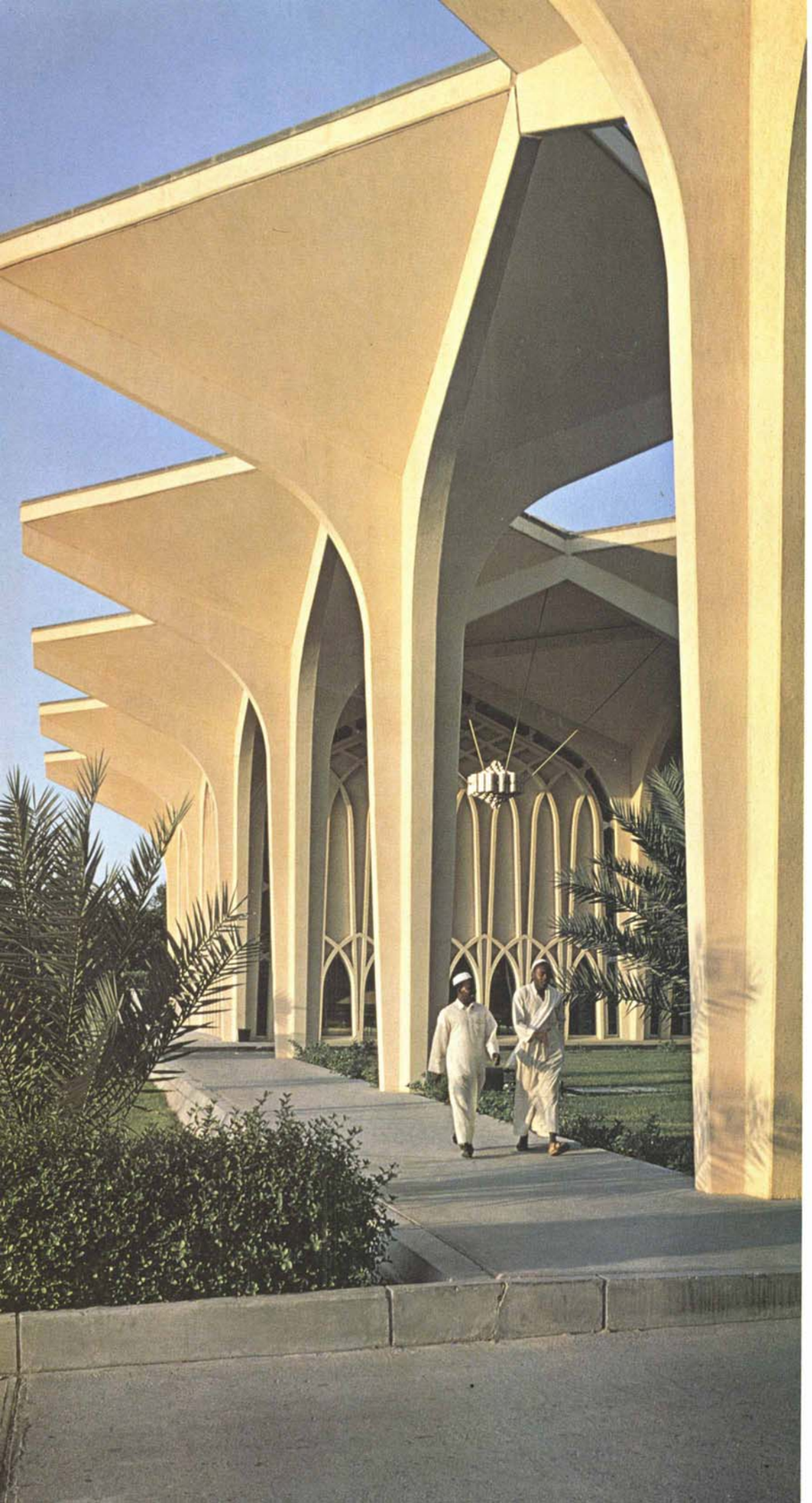

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MAY-JUNE 1971

BUILDING ON TRADITION

At dawn they begin to gather along the shore, and at sunset the most avid are still there: the quiet fishermen of Beirut. Color and story on page 3.

ARAMCO WORLD magazine

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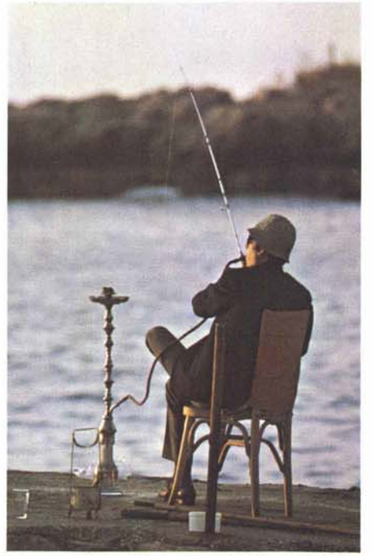
Cover: In this kaleidoscopic view of the soaring water tower on the new campus of Saudi Arabia's College of Petroleum and Minerals, photographer Burnett H. Moody catches the exciting potential of modern architecture with an Arab flavor. The first article of a series begins on page 15.

THE TRIBE OF



MORNING

BY JOHN K. COOLEY
PHOTOGRAPHED BY TOR EIGELAND

Isaak Walton, the best-known fisherman of letters, thought that "as no man is born an artist, so no man is born an angler." He might have second thoughts in Beirut.

For me, the hour before dawn is a witching hour in Beirut. The city empties of its night people. The taxi drivers, barmaids and night club customers slowly disappear. Then, in the silent streets that edge the sea, a new tribe of early morning people emerges: the part-time fishermen. As solitary individuals, and in quiet twos and threes, they move down the hilly streets toward the water and take their places along the C-shaped waterfront of the Beirut headland.

Like all fishermen, those in Beirut display a high degree of individualism in their selection of places from which to fish. Some prefer the rocks outside the harbor jetty, some the base of the dramatic cliffs called Pigeon Rocks. There are boys with camp stools planted on the sidewalk near the Phoenicia Hotel and old men who bring water pipes along to the beach and smoke contentedly between casts of their lines. One perch I find especially picturesque is the wobbly wooden platform of a cafe built precariously on stilts out over the bay at the end of the Avenue des Français. But my favorite—and a striking sight at this early hour—is the "barrels."

The "barrels" are just that: barrels. They're set into the reefs near one of the bends of the Corniche, Beirut's wide coastal boulevard, and they serve as seats for fishermen. Orange with rust, looking rather like the conning towers of submarines, they belong to individual fishermen who have set them into the reef, weighted them with cement and fitted them with pipes to hold the long fishing rods.

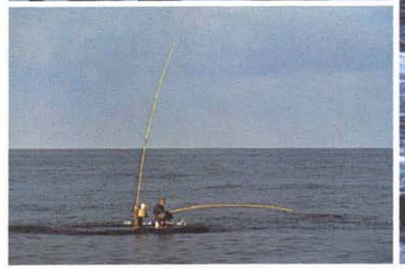
A city with few parks, the sea is Beirut's natural breathing space, and old men seem to gravitate to the Corniche to stroll with worry beads in hand—or sit with a pole—the way an American in the Middle West would find his way to the bench on the courthouse square or a European might linger by the fountain in his city's rose garden.

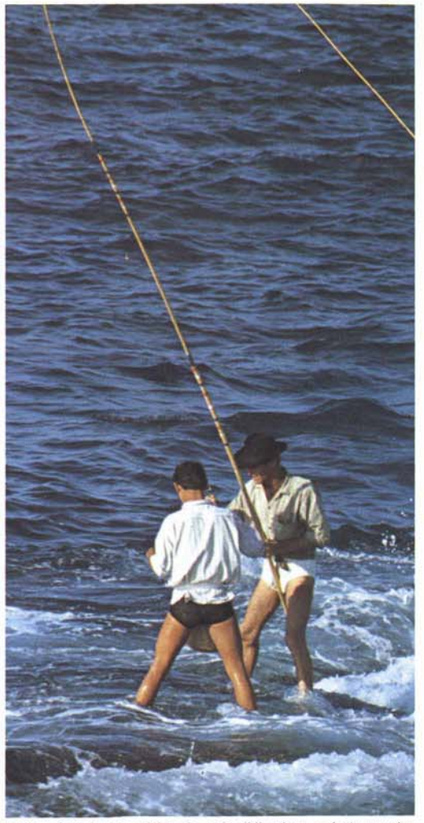
At dawn, scores of fishermen, bamboo poles in hand, line the rocks along Beirut's seafront Corniche, some barefoot in the water, others perched high—and usually dry—atop concrete-filled barrels.

Most of these quiet men are fishermen for the sheer pleasure of dangling a line in the water, but in Lebanon even commercial fishing is still done on a small and relaxed scale, principally with shore seines set out at night in small boats and rhythmically pulled ashore by teams of fishermen, beach boys—and any passers-by who want to help—after dawn. Trolling, trawling and purse seining are not widely used, though Japanese experts have been asked by the Lebanese government to advise on modern and more profitable fishing techniques.

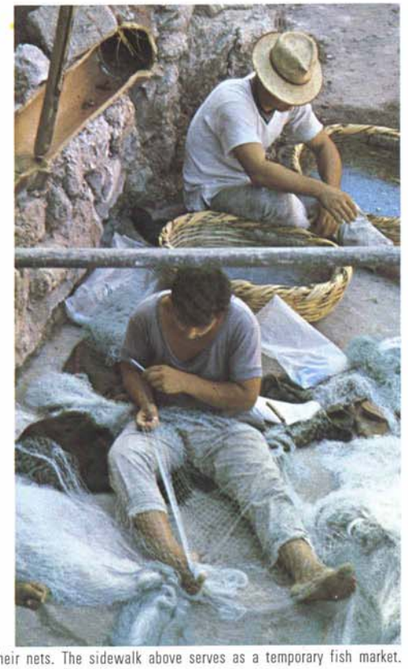
The government estimates that up to five years ago some 1,000 small fishing boats along the 150-mile length of the country brought in about 2,500 tons of fish annually. Tonnages have fallen off in recent years, however, and experts offer two reasons for it. One is dynamiting (strictly illegal but difficult to control off remote beaches) and the other is the undetermined changes in food supply and water salinity in the eastern Mediterranean since the Nile's Aswan High Dam began to cut down the flow of fresh water into the sea. In St. George's Bay, off Beirut, water pollution may also have begun to take its toll, for the Lebanese capital, like growing cities everywhere today, is at last having to face up to its years of unregulated discharge of sewage.

About midway between Beirut's chic Corniche area and the bustling hotel district is a relatively tranquil backwater called Ain Mreisse. For a few years while I lived there, in an old house above the sea, one of my favorite diversions in quiet periods was to watch the fishermen. On most autumn or winter nights, they would go out in their boats around midnight, their engines chugging softly away into the darkness beyond the little stony cove below. On early summer evenings, just after sundown, scores





Beirut anglers seven to seventy have their favorite spots and styles: from boats and barrels, splendidly alone or in busy pairs.



In a relatively tranquil cove at Ain Mreisse, not far from the bustling hotel district, fishermen drag their boats up and mend and dry their nets. The sidewalk above serves as a temporary fish market.

of other boats, fishing with brilliant pressure lanterns to attract the fish, looked like a cluster of luminous pearls bobbing gently on the surface of St. George's Bay. In the morning they would return, unloading their catch almost beneath my window, coiling the blue nylon trammel netting neatly into buckets. Later, after they had brewed tea, they would repair the nets and hang them on neat lines to dry and drag the boats up onto a pebble beach beneath the arches of a ruined house on the opposite side of the cove. My friend Hamid Rashid Sultani, dean of the fishermen at Ain Mreisse, told me they had six to seven boats working, compared to twice that many a few years back.

About seven, Ain Mreisse's miniature fish market on the sidewalk above the cove began operations most mornings with the return of the first boat. The fishermen's chief mascot, a dead ringer for Snoopy, with his own beach house facing the sea, was generally first to greet them, with a ceremonial bark. An eager circle of cats was next. As the fish were carried up to the sidewalk market in boxes they gathered around, critically watching the morning's catch. The senior cat, a black tom with watchful yellow eyes, did the policing. He dealt a cuff to any uppity feline who seemed to be making off with more than his share of the spoils, carefully rationed out by Rashid.

Rashid paid the fishermen for their catch, which was sold under a sort of co-operative arrangement. Some mornings, there would be exotic creatures to lure passers-by. A net may have brought up a large squid or an octopus. Once there was a huge sea tortoise, tethered by one leg to a peg. Often there were soft-skinned, sinister looking skates or rays, still fairly common in Lebanese waters, with delightful Latinized names like *Torpedo torpedo* or *Torpedo marmorata*.

Other local fish include mackerel, shad, graylings, eels of various sorts, smelts, and the sea catfish, smooth and silvery with his head enclosed in a sort of coat of mail. Near the shore swarm huge schools of goldsinnies. Like their near American cousin, the cunner, they are tiny fish often used as bait, but also commonly deep-fried and eaten hot and crisp in Beirut.

Many of the fish sold for high prices in the central market downtown and served in Beirut's many popular seafood restaurants are, in fact, imported. Some are trucked from Turkey through Syria; gourmet items may be flown frozen from Europe. Shrimps and lobster are local specialties, however, when in season, huge and sweet tasting though not always plentiful. The most sought after local delicacy, however, is the mullet. One variety, the surmullet, has succulent, tender white flesh. In the most exclusive restaurants mullet is in great demand today—just as it has been since Rome ruled the eastern Mediterranean. And any one of the part-time fishermen perched hopefully on his barrel will consider his wait well worth it if he pulls one in.

For the weathered fishermen of Ain Mreisse, and for the countless part-time fishermen of Beirut, age seven to 70, fishing is a year-round pursuit. Only the worst of the winter squalls keeps any of them indoors. Almost unnoticed in the hectic daily round of the city, they are somehow outside it. To me they seem at peace with the world. Even if, like a journalist, or that occasional American angler, Henry David Thoreau, you fish only in the stream of time, there may be some lessons to be learned from these quiet men.

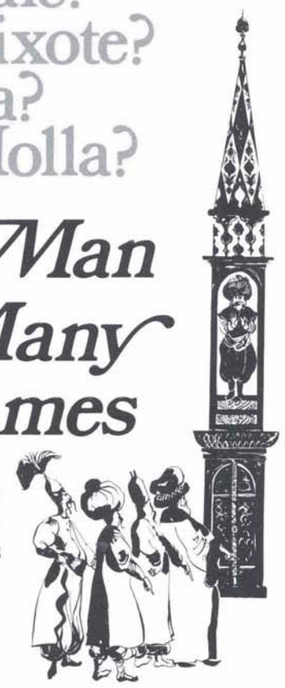
John K. Cooley, winner of two Overseas Press Club awards for Middle East news coverage, is correspondent for The Christian Science Monitor *and author of* East Wind Over Africa.

Goha? Nasreddin? Giucca? Jugale? Quixote? Jeha? Molla?

A Man of Many Names

BY PAUL LUNDE

ILLUSTRATED BY PENNY WILLIAMS



One Friday sometime in the 13th century in the Anatolian town of Akshehir, the Shaikh Nasreddin Hodja mounted the *minbar* of the Grand Mosque and addressed the congregation. "O Believers," asked Nasreddin, "do you know what I am about to say?" "No, we don't," chorused the congregation. Nasreddin paused dramatically, then said: "If you don't know what I'm going to say, then what's the use of my talking?" And he descended from the *minbar*. The congregation looked at one another in confusion.

A week went by, and when Friday came, Nasreddin once more climbed the steps of the *minbar* and addressed the congregation. "O Believers, do you know what I am about to say?" This time the congregation was not going to be caught napping. "Yes," they all answered. "We know what you are about to say." Nasreddin again paused dramatically. Then he said, "Since you all know what I'm about to say, there's no need for me to say it." And he descended from the *minbar*. The congregation was bewildered. Finally, they decided that next Friday, one half of them would answer "no" to the shaikh's question, and the other half would answer "yes."

A week went by, and when Friday came, the faithful hurried to the mosque. Nasreddin mounted the *minbar*. "O Believers," he said, "do you know what I am about to say?" "No!" shouted half the congregation. "Yes!" shouted the other half. Nasreddin paused dramatically. Then he said, "Very good. Those of you who know tell those who don't." And he descended from the *minbar*.

Some modern Turkish scholars consider Nasreddin Hodja a historical personality. There is a tomb bearing his name in Akshehir. The inscription, if read backwards (this may have been a posthumous joke), gives a date of A.D. 1284 for the death of Nasreddin. He is supposed to have been born in 1208, in the small town of Khorto near Siwri-hisar. This would have been during the period when the Seljuk dynasty ruled this part of Asia Minor. Yet many stories are also told of Nasreddin's witty remarks to Timur Leng, the famous Tamerlane of Marlowe's play, who lived about 150 years later. For example, the day Nasreddin and Timur Leng went to the baths, Timur Leng turned to Nasreddin and said, "Tell me in all honesty. If I were a slave in the slave market, how much would you give for me?" Without hesitation, Nasreddin answered, "Fifty dirhams." "Fifty dirhams!" yelled Timur Leng. "This belt around my waist alone is worth fifty dirhams!" "I know," said Nasreddin. "I added that in."

Needless to say, if anyone had had the temerity to say such a thing to the redoubtable Timur Leng, his head would not have long remained joined to his body. But it was nice to believe that there was a Nasreddin Hodja around to cut tyrants down to size, and as time went on the oppressed Anatolian peasantry delighted in adding to the exploits of the indomitable Nasreddin. In these stories he usually appears as a sort of inspired simpleton. For example, one day some people asked him, "When the new moon appears, what happens to the old one?" Answered Nasreddin, "They cut it up and use it for stars."

Although stories about Nasreddin may have originated in Anatolia, they soon swept across the Muslim world. No matter where he went, Nasreddin was made an honorary citizen in his adopted country. The Persians call him "Mollah," a title equivalent to the Turkish "Hodja." The victorious Ottoman army carried stories about Nasreddin Hodja with them as they swept through the Balkans and Greece. When their European possessions were severed from the empire, the stories of Nasreddin Hodja remained. Today stories about Nasreddin are told in Albania, Armenia, Bulgaria, the Crimea, Georgia (in the Caucasus, not the American South), Greece, Rumania, Russia, Turkestan and the Ukraine.

But Nasreddin's greatest popularity was reserved for Arabic-speaking lands. In Egypt he is called Goha, in the Sudan, Jawha, in Algeria, Jeha, and in Morocco, Jha. (The name gets shorter and shorter as one approaches the Atlantic.) For the sake of simplicity, we will call him Goha, like the Egyptians. One may well ask how Nasreddin was transformed into Goha. It seems likely that the name "Goha" was much earlier than the Turkish Nasreddin. In fact, Goha originally seems to have been an entirely different person, a member of a Bedouin tribe renowned for his simplicity. What seems to have happened is that Nasreddin and Goha coalesced into one person sometime in the 16th century. Today, the printed versions of his "pleasantries" sold in *suqs* from Cairo to Marrakesh give him the imposing title of Hodja Nasr al-Din Effendi Goha. In each country into which he has been adopted, the stories told about him naturally reflect the temperament of the people. When stories are told in the countryside, Goha is usually portrayed as a simple peasant. In the cities, his personality is more complex—sometimes he is a fool, sometimes he has the cunning of a Yankee city slicker. The following story from Morocco shows him in his role as peasant.

One day Goha entered a vegetable garden while its owner was absent and began to stuff a sack with fruits and vegetables. As he was about to leave, with the sack over his shoulder, the owner returned. "What are you doing here?" he asked suspiciously. Goha answered without hesitation. "That wind storm we had this morning blew me here." "I'll accept that," said the owner somewhat grudgingly. "But who picked those vegetables in your sack?" Again Goha answered immediately. "The wind was very strong and was about to blow me away again, so I grabbed onto the first thing I could, which happened to be these vegetables I am still holding." "I'll accept that, too," said the owner. "But how did the vegetables get into the sack?" "Funny you should mention that," answered Goha. "I've been wondering about it ever since I first saw you."

From North Africa, stories about Goha spread into Malta (where he is known as Jahan) and into Sicily (where he is called Giufa). From Sicily, the stories passed into the Italian mainland. In southern Italy he is called Jofa, Jufa, Jugale, Jugane, and Giuvale. In northern Italy, he goes under the name of Giucca.

One of the most famous stories of Nasreddin-Goha is the story of the kettle. This story has even turned up in Afghanistan. One day Goha borrowed a kettle from one of his neighbors, and after a few days returned it with a small saucepan inside it. His neighbor was surprised at the presence of the saucepan, and asked Goha, "How did this get in here?" "The kettle had a baby," Goha answered. The neighbor was delighted, and laughing over Goha's stupidity, took both kettle and saucepan. After a few weeks had gone by, Goha returned and asked to borrow the kettle again. Naturally, the neighbor lent it to him with alacrity. Weeks went by, and Goha made no effort to return it. Finally, the owner went to Goha's house and asked for his kettle back. "May God have mercy on its soul," replied Goha. "Your kettle has died." "Died!" yelled his neighbor. "Since when do kettles die?" "Ever since they've been able to have children," answered Goha.

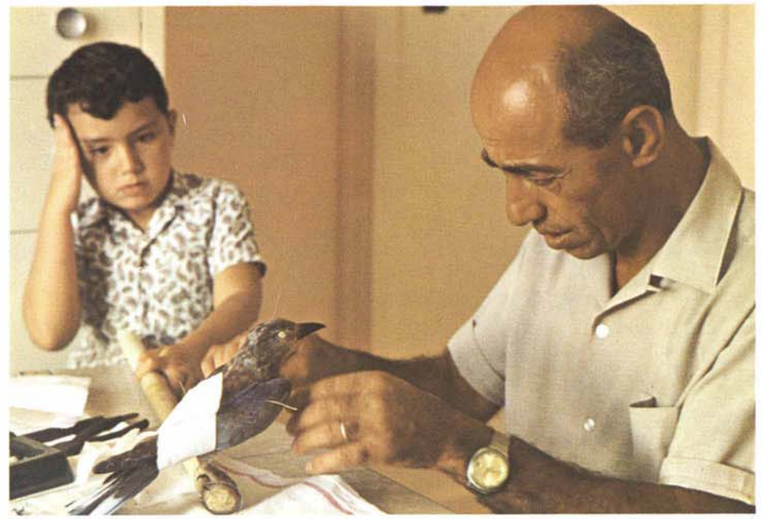
There are hundreds of Goha stories, and in traditional countries, like Morocco, almost everybody can tell dozens. But the fortunes of Nasreddin Hodja, who became Goha in the course of his travels, were not to be limited to oral tradition. In 1913 an Egyptian, Albert Ades, met Albert Josipovici, born in Constantinople, at a masked ball in Heliopolis (a town near Cairo) and found that they both knew a great many Goha stories. They collaborated and wrote a novel in French called *The Book of Goha the Simple*, which was published in 1919. It came close to winning the prestigious Prix Goncourt (the prize was awarded instead to Marcel Proust). It was translated into seven languages, turned into a play, and finally in 1958 was made into a movie which won a prize at the Cannes film festival.

But Goha stories may have had an earlier influence on European literature. It has been suggested that Cervantes got the idea, and perhaps even the name, for his great work *Don Quixote* (at that time pronounced "kihote") from Goha stories. After all, Cervantes spent some years as a prisoner in Algiers, and what better way to while away the time in a dreary cell than by exchanging Goha stories with one's jailer?

Paul Lunde has lived in Saudi Arabia, won degrees in English, Arabic and Persian from the University of California and The London School of Oriental Studies. He is now studying Rumanian in Rome and compiling a bibliography of early Italian books on Turkey.

The Birdman of Rafah

BY BRAINERD S. BATES/PHOTOGRAPHED BY KHALIL ABOU EL-NASR



Skilled taxidermist Reda Abdul-Samad prepares a specimen of one of the many varieties of migrating birds which visit Rafah.

For the migratory birds that fly the north-south circuit in Arabia each spring and fall the skies above the Trans-Arabian Pipeline have long been a favorite transit route. Amid the vast stretches of rolling desert and flat gravel plains of northern Arabia the islands of green surrounding the pump stations mean food and rest amid often lush vegetation.

It was not, unfortunately, the safest of routes. In the days before conservationists of the world sounded the alarm, hunters in and around the pump stations often brought down what some observers considered to be an excessive number of birds—observers like Reda Abdul-Samad.

For many years Reda Abdul-Samad, a Lebanese diesel/gas turbine technician, has been assigned to the Tapline station called Rafah. He was also, for a time, an avid hunter—until the day he began to notice that some of his favorite species aloft were thinning out. From that point on he turned to the serious study of the appearance and habits of all local and migrating types, first by photography, then, after chancing on an advertisement in **Outdoor Life,** by ornithological taxidermy.

The advertisement said that the Northwestern School of Taxidermy of Omaha, Nebraska, could teach anyone how to stuff and mount animals and birds by mail. Abdul-Samad clipped out the coupon and sent for instructions and some special instruments. When they arrived he settled down to master taxidermy. He thought too that if he succeeded he might also encourage a wider interest in natural history among friends and students.

The practice of taxidermy requires artistic as well as mechanical skill to give the lifeless model a completely natural appearance. Abdul-Samad practically rebuilds a bird's sinewy base structure with wire. He also molds manikins for his mountings out of tightly bound excelsior. To match eyes—there are as many sizes and

A bird's-eye view makes Rafah look like a lush green island.

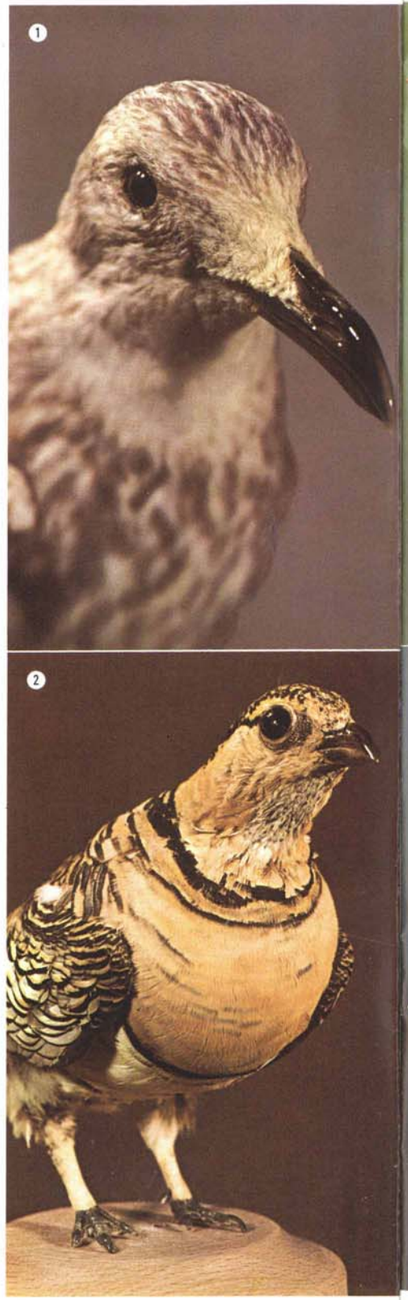
colors as there are species of birds—he had to resort to glass beads from costume jewelry.

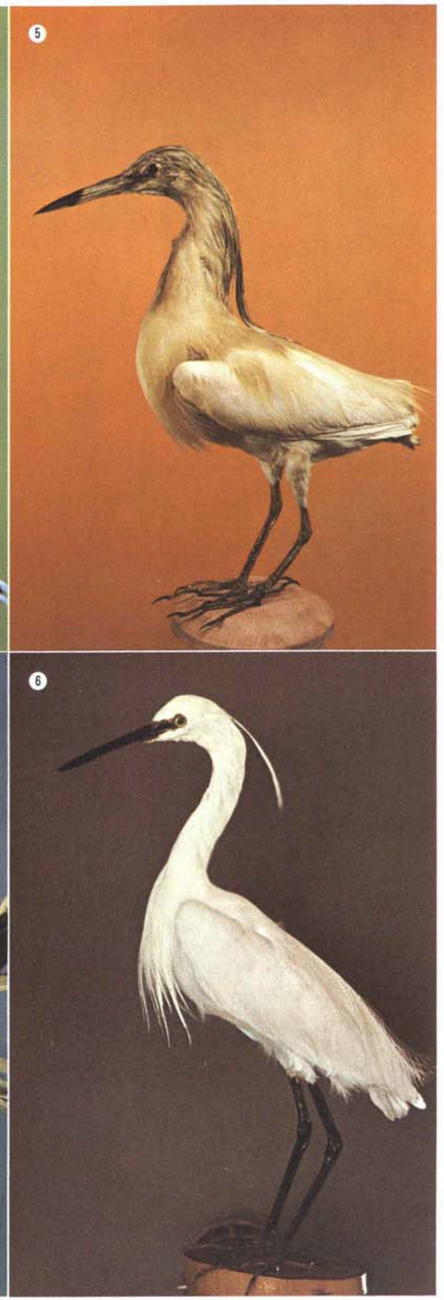
From his long experience as hunter and bird watcher, Abdul-Samad was able, quite early, to achieve the realism he insists on in stance and posture. He could correctly label most of his models from his own knowledge but to be certain he regularly consults such standard references as **Migratory Birds.** In these days, when stuffed animals and birds are usually displayed only in museums and rarely as the parlor decorations which were once so popular, a truly skilled amateur taxidermist, which Abdul-Samad has now become, is a rare specimen indeed—in the Arab world or anywhere else.

So far, Reda Abdul-Samad has mounted more than 120 different kinds of birds. These have included sparrows, hawks, hoopoes, the golden oriole, white, blue and night herons, kestrels, five or six kinds of shrikes, and many species of warblers. The Arabian Natural History Association of Dhahran has on display 75 examples of Abdul-Samad's art. Through such permanent showings, plus the occasional lectures he gives, Reda Abdul-Samad is introducing an ever-increasing number of people in the Middle East to the birds which frequent this region. Closehand looks at species normally appearing as distant objects in the sky inspire fresh appreciation of this form of nature which could easily lead to renewed efforts to conserve the kind.

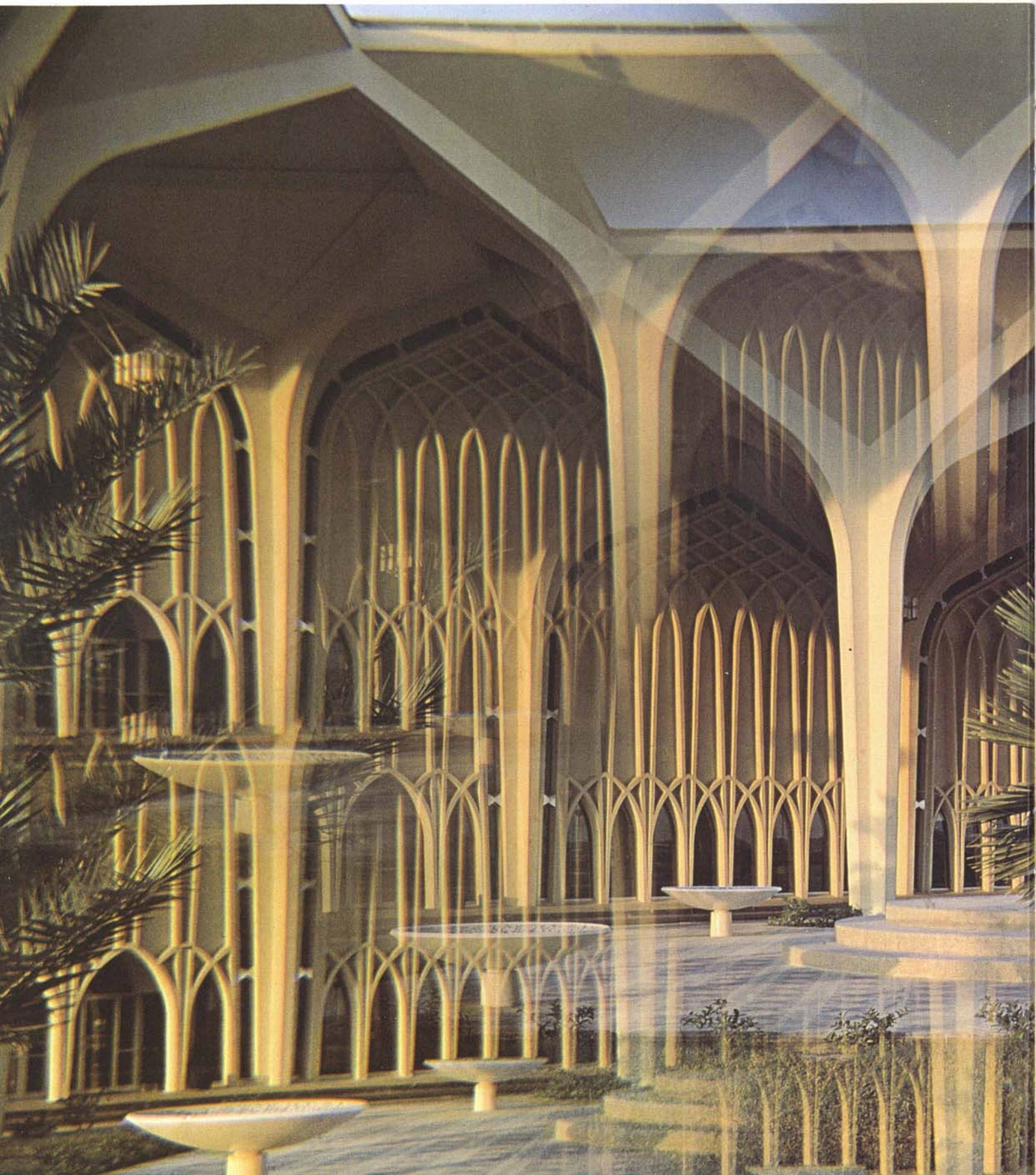
Brainerd S. Bates contributes regularly to Aramco World *from Dhahran.*

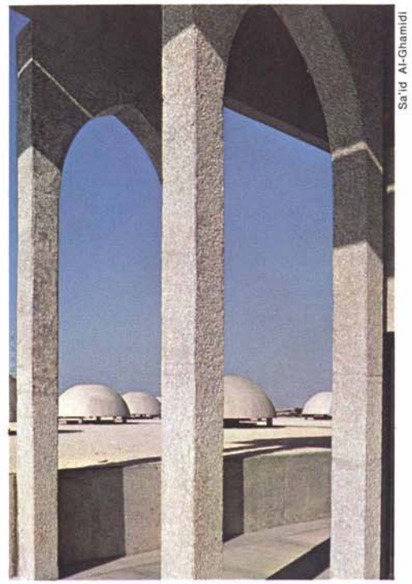
Golden oriole and bee eater top a display of small birds.





Some examples of the taxidermist's work: **1)** gray sea gull, **2)** pintail sand grouse, **3)** kingfisher, **4)** black headed tern, **5)** squaco heron, **6)** lesser egret.





Sa'id Al-Ghamidi

Modern architecture with an Arab flavor

BY FRIEDRICH RAGETTE
PHOTOGRAPHED BY BURNETT H. MOODY

Not too many years ago, most architects would have found the terms "modern" and "Arab" incompatible. Any suggestion that the ancient forms developed by the Arab world years ago could somehow be married to modern international architecture—as embodied in the steel and concrete towers of today's world capitals—would have been laughed off the drawing board.

And not without reason. With the exception of the horseshoe arch and some excellent decorative techniques, the Arabs had few building traditions that were not clearly derived from their Byzantine and Persian victories. To put it bluntly, there was virtually no purely "Arab" architecture.

Also, the major construction projects which were to spearhead the area's post-World-War-II building boom were airports, factories, office towers and television stations whose needs had already spawned the basic shapes of the efficient but impersonal and unimaginative glass and steel structures so common to modern capitals. Lastly, many of the rulers in the newly prosperous Arab countries insisted on modern architecture as a way of presenting at least the façade of a modern nation to visitors.

It might be argued that the western architects brought in to design those structures were negligent in not trying to develop local themes. But this ignores the fact that in the post-war period there were few architects who did not wholeheartedly believe that technology was international and that contemporary functional architecture could be—and ought to be—transplanted anywhere. In any case, there proliferated throughout the Middle East impersonal, rootless structures, totally ill at ease in their environment, and suffering, moreover, from poor execution and almost no adequate maintenance.

This is still a problem today, but in the interim the Arab world has become more aware of the cultural values that are at stake. Arab architects in particular have realized that they must live with the buildings they create, and have become involved in the sophisticated process of distinguishing the valid elements of their traditions from the anachronisms. They also have a growing personal interest in efforts to reinterpret the standard forms of the international metropolis in the light of particular national backgrounds.

With increased experience such men have sorted out the four main elements which had for centuries contributed to the regional peculiarities of traditional Arab or Islamic architecture and which, they slowly began to realize, might just as logically influence modern design. The elements were climate, local materials and building techniques, habits of living and traditional forms of design.

In the Arab world, climate—i.e., a strong, intense sunlight most of the year—is a powerful factor. Builders must protect the inhabitants from the sun by limiting (or eliminating) windows, providing shade and insuring adequate ventilation. Since modern design usually calls for large windows, architects in the Middle East generally settle on some kind of protective screens or panels outside the windows. Since such devices also enable the designer to introduce playful or striking decorative patterns, yet maintain order and harmony through prefabrication techniques (which demand repetition of standard forms), it has been a happy compromise.

Valid architecture will also consider the climate in selecting the fabric of the building itself, in exposing it to, or protecting it from, prevailing winds and blazing afternoon sunshine, and in such features as wall thickness, roof insulation or the height of ceilings.

This makes sense even today. Air conditioning or other artificial cooling techniques, however effectively they neutralize the effects of the sun, do so only at continuous expense for power and maintenance. And as anyone who remembers the New York power blackout might imagine,

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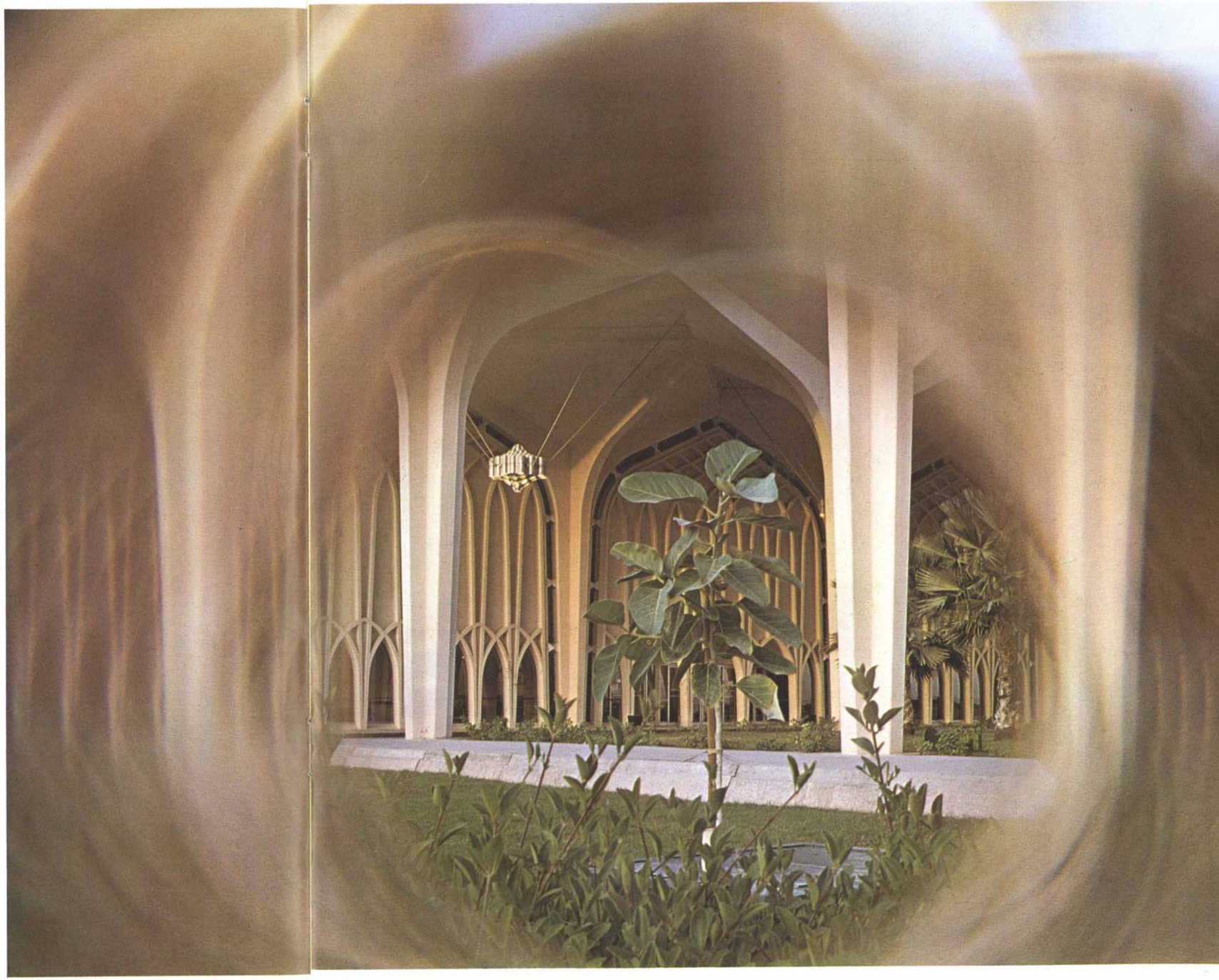
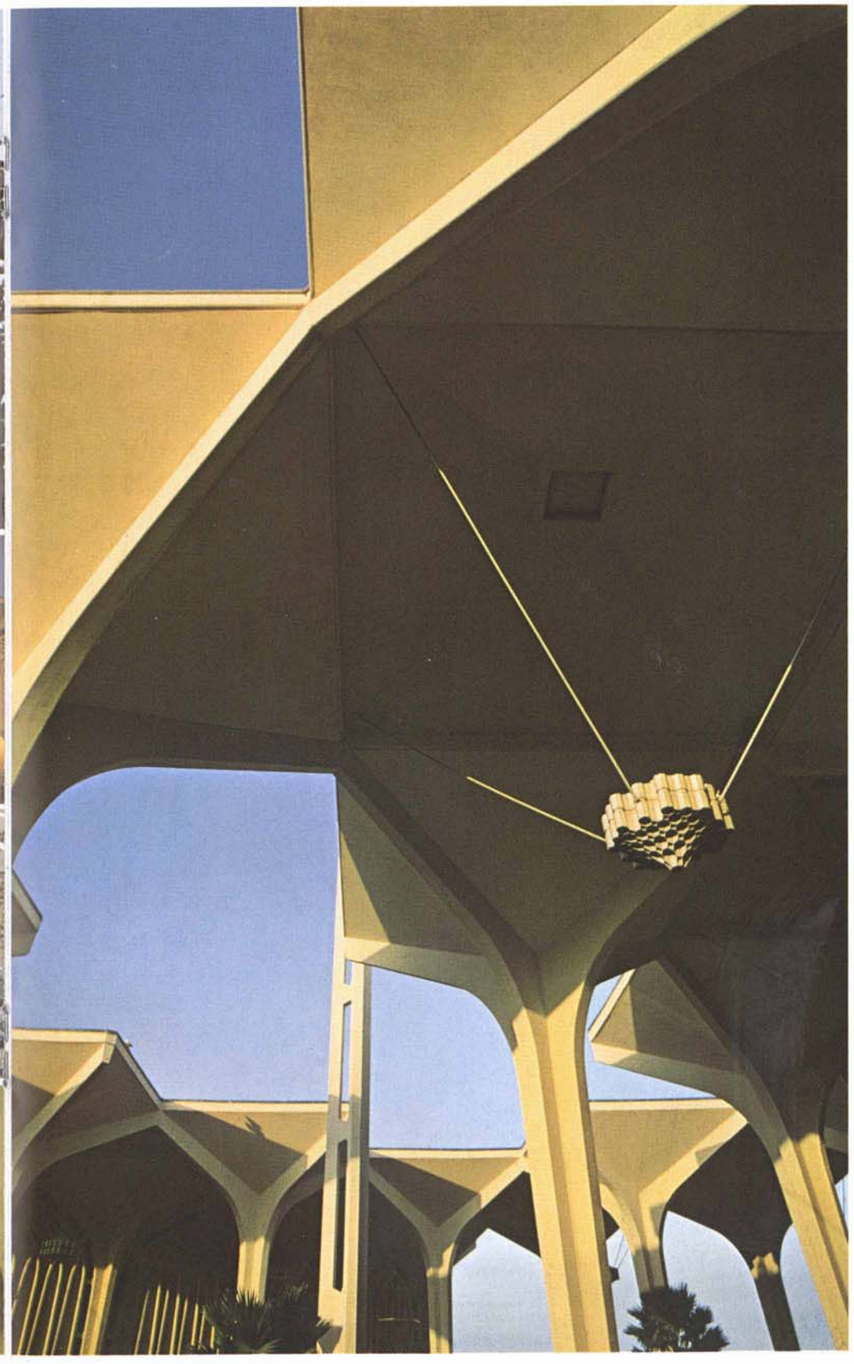


DHAHRAN AIR TERMINAL



When Minoru Yamasaki, the Japanese-born American architect, first visited the Eastern Province of Saudi Arabia to inspect the site of a proposed air terminal, he was disappointed by the lack of Arab character in the area.

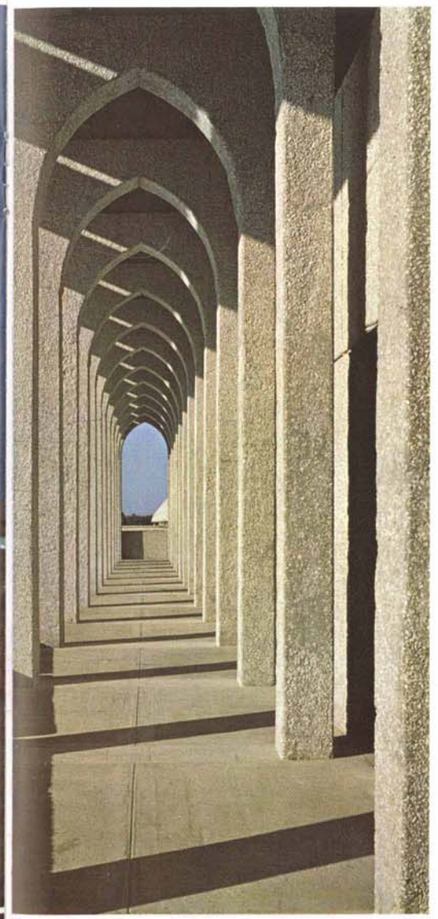
This condition is not rare in areas which—though they belong to an ancient culture—have only recently developed on a large scale. If the air terminal of Dhahran is a striking example of new "Arab" architecture it is not because it was adapted to its environment, but because Minoru Yamasaki was able to create a new form that in effect reestablished a national identity. It was this very quality which made the government select Mr. Yamasaki's project, and which established it as the prototype of a new school of recognizably "Arab" architecture.

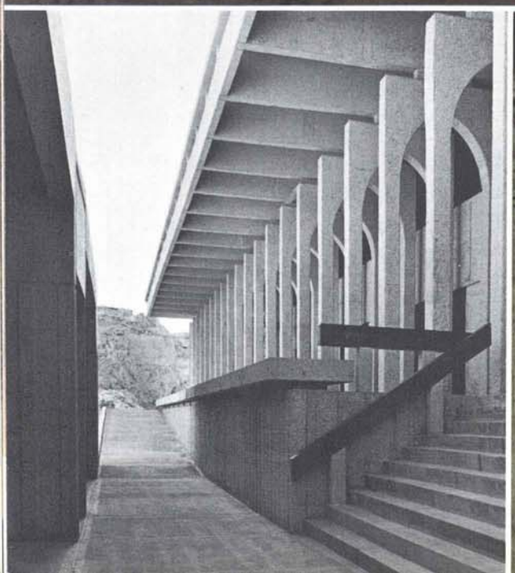
The key element in the design of the Dhahran terminal is an umbrella-shaped concrete unit which answers the most up-to-date requirements of economy through prefabrication, structural efficiency and ease of erection, yet, when combined with other units, forms a pattern of high, graceful, pointed arches. It is an astonishingly effective design in which Yamasaki manages to suggest the Gothic vastness of a cathedral and the simple austerity of a mosque without detracting from its efficiency as a busy air terminal.

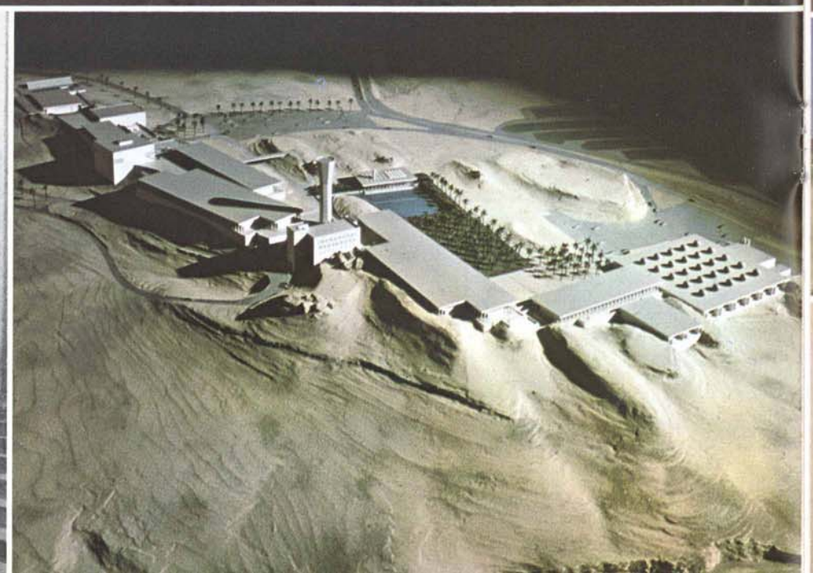
Yamasaki, however, would have been unable to combine these elements into a convincing whole had he not also used the traditional Arab theme of horizontal dominance and vertical accent as his base. This theme—which is also apparent in the nearby Petroleum College campus—emerges in the air terminal as a low, if light, mass accented by a soaring, delicate concrete tower. The whole is enhanced by suspended lamps, lacy screens, and stained glass.

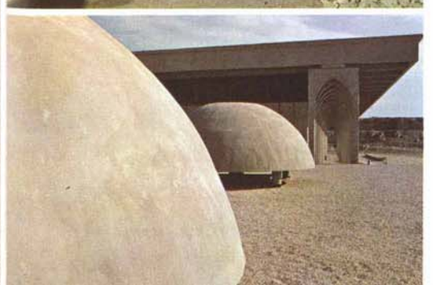
The terminal, completed in 1961, was one of the first examples of modern "Arab" architecture and has influenced subsequent design throughout the Middle East.

COLLEGE OF PETROLEUM AND MINERALS









Already, amid the clutter and confusion of construction, the striking beauty of Saudi Arabia's College of Petroleum and Minerals is obvious: long colonnades of pointed-arch supports, the soft patterns of domed roofs and the lean water tower suggestive of a minaret, all contributing to a theme that is severely modern, recognizably "Arab," and closely attuned to its stark desert setting.

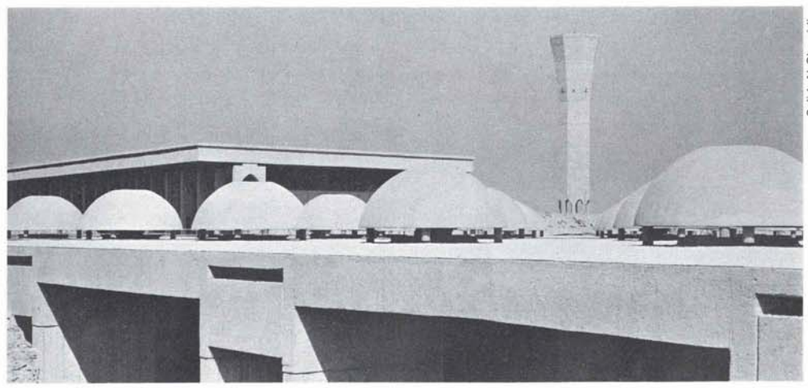
In a project like the Petroleum College the decisive factor is the basic concepts from which the formal aspects are derived. And in planning the college the architects—Caudill, Rowlett and Scott of Houston, Texas—shaped the concepts from the isolation and prominence of the hilltop site, the harsh terrain surrounding the site, the need for protection against extremely strong sunlight, high winds and sand storms, and the need to establish in such an environment an enclosed "oasis" of green.

The site of the college is the ridgeline of a hill which dominates the main highway between the nearby town of al-Khobar, the air terminal and Dhahran. It is a rugged site and its character has clearly influenced the master plan; no two buildings are parallel to each other, and all spaces have a non-rigid, organic quality. On the other hand building shapes and masses were kept simple and dignified to provide continuity and unity. These aspects, together with the elevated position on the hill, produce an impressive image from all sides, a focal feature for the whole region of Dhahran.

The concepts of climate and "oasis" go together. The buildings were arranged and designed to turn their backs to the searing winds of the desert, and to surround a protected inner zone which is being developed into a garden with a reflecting pool. As a shield from the sun, lofty colonnades were erected around buildings where there will be continual student movement.

On the formal side the architects avoided the superficial application of arabesque motifs; instead they made excellent modern use of essential Arab architectural features: the contrast of predominantly closed, low horizontal masses with one vertical element—here the very important water tower—the repetitive use of the pointed arch as support, and the dome as a roofing device.

All this is being executed in a straightforward way. For exterior texture the architects have ordered nothing more complicated than raw, reinforced concrete, the exposed face of which will be sandblasted to show the local aggregate. This way the color and texture of building exteriors will be extremely durable and will also blend perfectly with the surroundings.



Sa'id Al-Ghamidi

continued from page 16

a building which depends exclusively on mechanical cooling would, in a hot climate, become instantly unlivable in the event of a similar power failure.

The second element, the availability of local materials and building techniques, is no longer a restrictive factor in architecture; concrete and steel are totally international materials, basically devoid of regional characteristics. But imaginative architects in the Arab world have achieved some striking effects by searching out and using characteristic materials such as native stone, brick, stucco, ceramic and tiles. By contrasting local materials with modern ones, the architects have also produced some original and valid regional themes. In the Middle East this is still a practical technique because until now the labor-material cost ratio has permitted the inclusion of certain decorative details which would be prohibitively expensive in western countries.

Specific living habits have much less impact. Functionally modern buildings —office towers, airport terminals and broadcasting stations—will differ little from non-Arab, international structures, but in buildings where the personal, human elements are important—"villas," apartment buildings and some schools—particular styles of living can shape a structure. New town planning schemes—in Egypt and Saudi Arabia, for example—also reflect basic social habits.

The influence of the fourth element —traditional arches and domes, and such indigenous decorative forms as stylized geometric patterns—is the easiest to spot. For although both dome and arch are structurally obsolete when executed in reinforced concrete, they do remain a popular element in design. The pointed arch, particularly, is often used to achieve an "Arab" effect. This arch, an ancient eastern form, was rejected by Roman architects as a violation of the geometric correctness of the arch principle of construction, but the Arabs, more inclined towards decorative effect than the expression of structural logic, adopted the horseshoe and the broken arch as their most characteristic architectural trademark.

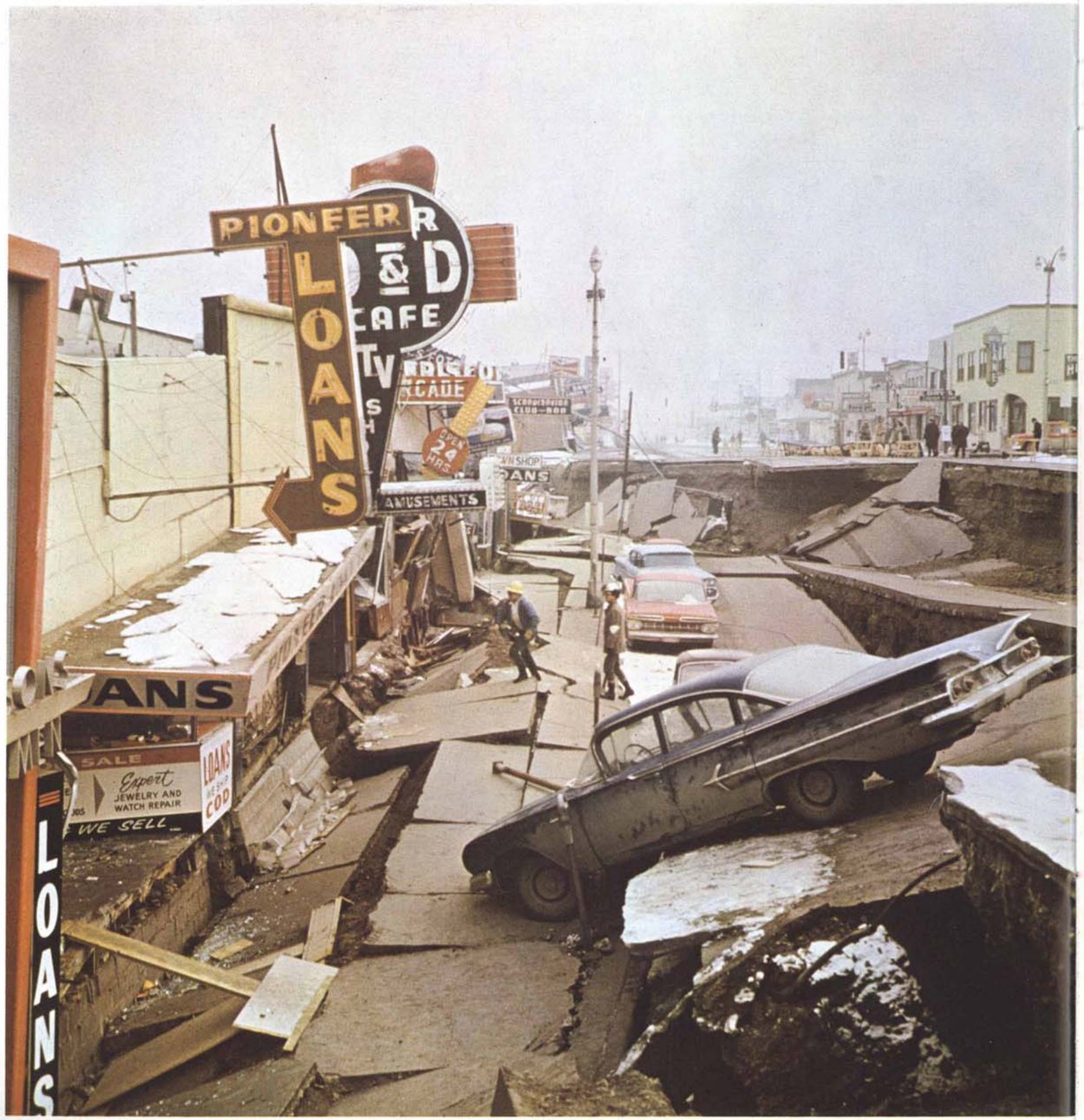
To create an "Arab" architectural theme from those few elements would be a considerable challenge for any architect. What it means is that he must consciously—even self-consciously—integrate essentially foreign elements into a Middle East environment, and vice versa. In effect it is trying to mix pride in the distant past with a search for a modern image, and it takes gifted and skillful designers to find a satisfying solution.

Some architects have been successful in creating a regional tone by stressing such traditional aspects as cubic simplicity, solid masses and asymmetrical distribution of openings. In a few instances the conscious recreation of traditional architecture has been undertaken, generally for tourist projects in localities where a strong ancient character happens to have survived. And even there, historical exteriors must be blended with modern interiors, not always an easy task.

Because of such problems, good modern architecture with an Arab flavor is still rare. But with excellent help from abroad a tradition *is* taking shape. It is a complex evolution and the first examples hint at exciting potential. To examine some of those examples further, *Aramco World* in the next few months will run a series on some of the buildings that, hopefully, will be landmarks in the development of that potential.

Friedrich Ragette, Assistant Professor of Architecture at the American University of Beirut, is temporarily at the Technical University of Vienna. This article is the first of a three-part series on modern Arab architecture.

The tremor which hit Anchorage, Alaska on March 27, 1964, dropped sections of Fourth Avenue as much as 20 feet. Photograph © United Press International. Opposite page: a mourner sits amid the ruins of his house after the devastating quake which struck Kakhk, Iran in August 1968. Photograph by Harry Koundakjian.



EARTHQUAKE!

BY ELIAS ANTAR

It was a brilliant summer day in August 1968. The sun blazed down from a cloudless azure sky onto the Iranian farming town of Kakhk, some 500 miles east of Teheran. A cooling breeze rustled the corn stalks in the fields around the town and, farther out, whipped up little dust clouds from the biscuit-colored desert. Wisps of grey smoke rose from practically every mud-brick house as women prepared the midday meal for their husbands and children. The dome of the mosque dominating the town, decorated with blue, green and gold mosaic designs and inscriptions, glittered like a jewel. The townspeople were proud of their mosque, for the dome could be clearly seen from miles away, when the town itself was but a brown blur in the heat haze.

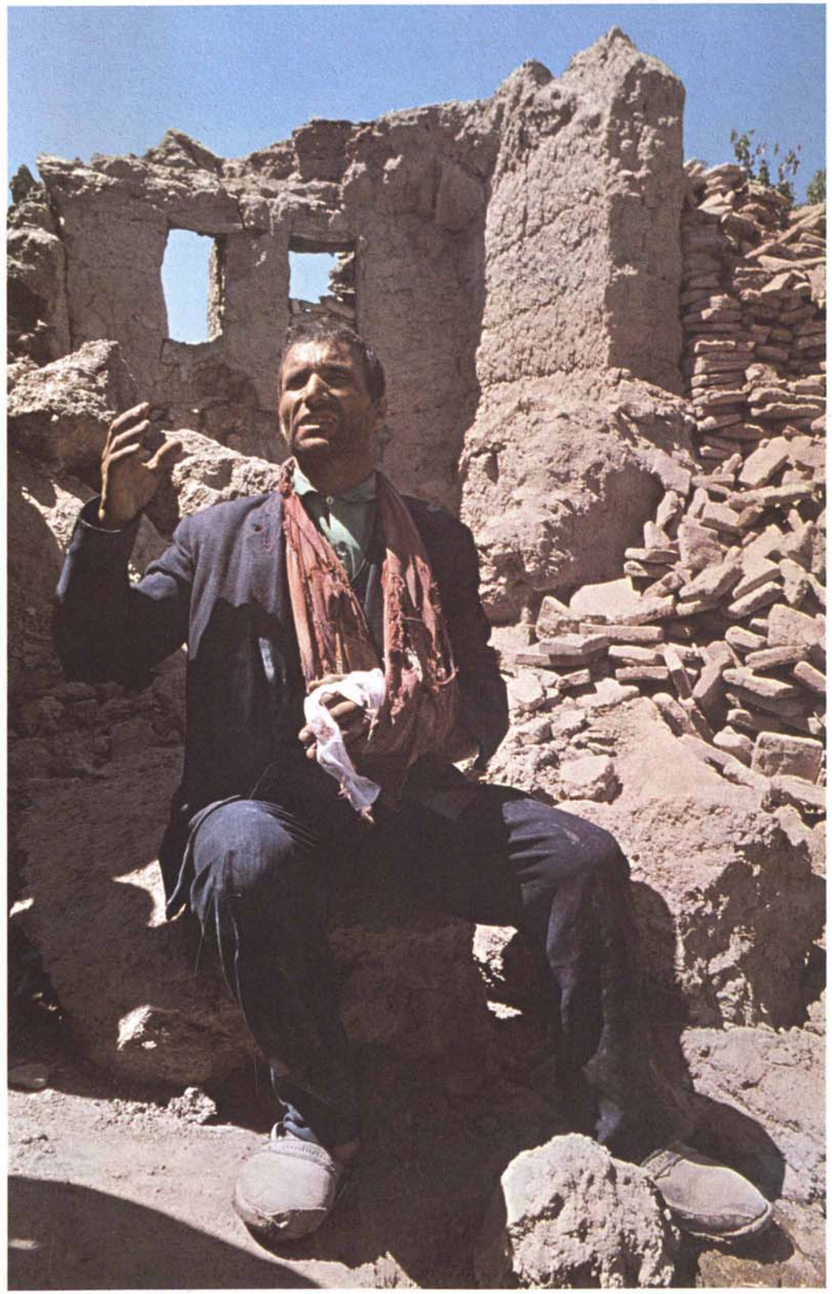
Shortly before noon, most of the men working the fields began to head toward the mosque, anticipating the muezzin's call to prayer. Some, behind in their work, spread out their coats on the brown earth as prayer mats and recited their prayers alone. After prayers, those who went to the mosque hurried home for a quick meal and a brief rest before returning to the fields.

Hussein Hedayat, a farmer, tarried more than usual over lunch. A few minutes after 2 p.m. he left his house and walked down the dusty street to the fields.

At 2:17 p.m., his world collapsed around him.

"The buildings around me began falling," Hedayat later recalled. "I grabbed a tree and hung on. When the dust settled and I could see again, my house was gone. My wife and daughters were dead."

So were 5,000 townspeople out of a population of 7,000. In four awful



In Kakhk, some 5,000 persons died, more than 1,000 mud houses collapsed. To avoid an epidemic, what was left was later bulldozed flat. Photograph by Harry Koundakjian.

minutes on Saturday, August 31, a massive earthquake literally wiped Kakhk off the map.

The people of Kakhk were not the only victims. Together with equally violent aftershocks over the next day, the quake killed a total of 11,600 people in Iran's remote Khorasan province, devastated 14 villages, partly demolished 16 more and left 100,000 homeless over an area of 750 square miles.

But Kakhk, the epicenter, was the worst hit. Out of 1,300 buildings only three were left standing. One was the mosque, its shimmering dome, beckoning from afar, now a great tombstone for the bereaved community.

In retrospect, as one rescue worker put it, Kakhk "didn't have a chance." The mud-brick houses and their sand foundations formed the worst possible structural combination to resist earthquakes. Most of the victims died in the ruins of their homes, smothered within minutes under collapsed ceilings and walls, or crushed in seconds under tons of brick. Three hundred who were injured in the first shock were taken to a hospital in another town—only to die in an aftershock the next day.

More than three days after that black Saturday, many survivors were still sitting in the streets or under trees, staring uncomprehendingly at the wreckage of their homes. One elderly farmer, his forehead swathed in bandages and his grizzled beard matted with dust, kept calling to his three-year-old son, who died in the first shock wave. "Jaafar, Jaafar, where are you? I used to play with you every day. Why has this happened?" Ibrahim, the town barber, sat on the heap of rubble that had been his home, demented with grief but crying without tears. His wife and four of his five children were entombed somewhere below. A young girl in a red dress, its white polka dots streaked with blood, pulled clear a golden samovar from her home—the only thing that remained intact. A weeping mother, whose own children had all died, clutched a tiny girl to her breast and tried to comfort her two sisters. Their parents and the rest of their family had died.

There were a couple of near-miracles in Kakhk. A three-year-old boy and his grandmother were pulled unharmed from under the shelter of a fallen archway. She had kept him busy for almost two days by reading passages from the Koran. Nine days after the quake, a six-year-old boy was rescued from the ruins unconscious but alive. They were the exceptions, however. By the fourth day after the quake struck, only about 1,000 bodies had been recovered. The thousands of dead remaining under the ruins had begun to decompose in the heat; rescuers trying to pull them out were dismembering the corpses. To avoid the outbreak of disease, authorities reluctantly decided to bulldoze the town flat, victims, houses and all.

Kakhk was no more.

For the Middle East the tragedy of Kakhk was by no means unique. Earthquakes in this region have been a curse for centuries. The ancients thought they were the wrath of the gods and some cultures worshipped earthquake deities that had to be appeased to avoid destruction. The Roman emperor Justinian prohibited under penalty of death certain kinds of sexual offences, blasphemy and the practice of swearing by the hair of one's head, on the grounds that such practices notoriously provoked thunderbolts and earthquakes.

Scientific knowledge nowadays has generally swept aside the cobwebs of superstition as far as earthquakes are concerned. But scientists still cannot predict when, where and with what force an earthquake will strike, nor do they know what causes one. Based on historical data and the readings of modern instruments, it has been established that there are regions in the world where earthquakes have occurred with the most frequency in the past and where they are likely to occur again. These areas, known as "earthquake belts," run under the land and the oceans. A belt known as the "mid-ocean ridge" meanders from northern Russia over the Pole, down the center of the Atlantic, around Africa, across the Indian Ocean and the South Pacific, and along the western coast of North America. On land, the areas on the rim of the Pacific

The 1906 San Francisco earthquake split the earth wide open, but most damage was caused by fire. Photos © U.P.I.

SOME OF THE MAJOR RECORDED EARTHQUAKES IN THE MIDDLE EAST A.D. 526 – 1970

Year	City or Region	Deaths
526	Antioch	250,000
551	Lebanon	30,000
588	Antioch	60,000
856	Khorasan, Iran	45,000
872	Iran	20,000
1114	Southern Turkey	40,000
1157	Northern Syria	40,000
1183	Antioch and Northern Syria	20,000
1201	Nablus	30,000
1268	Silicia, Asia Minor	60,000
1688	Smyrna, Turkey	20,000
1721	Tabriz, Iran	8,000
1755	Tabriz and Isfahan, Iran	40,000
1759	Palestine, Lebanon and Syria	
1796	Latakia	1,500
1822	Aleppo and Asia Minor	22,000
1837	Safad, Palestine	5,000
1853	Isfahan, Iran	10,000
1872	Antioch and Syria	1,800
1939	Turkey	40,000
1960	Iran	450
1962	Iran	12,200
1966	Varto, Turkey	2,279
1968	Kakhk, Iran	11,600
1970	Gediz, Turkey	2,000

Ocean are very seismic, and another belt, called the "Trans-Alpine" stretches from the Azores, across northern Algeria, through southern Italy, Yugoslavia and Greece, across most of Turkey and Iran, and on beyond the Himalayas down into Burma. About 17 per cent of all the world's quakes occur in the Trans-Alpine belt; Kakhk was right in the middle of it.

There are several theories about *how* an earthquake happens, as distinct from *what* makes it happen. The most generally accepted one was formulated by scientist Harry Reid after the famous 1906 San Francisco earthquake. Briefly, the theory says that earthquakes usually occur where there are cracks or faults in the earth's crust. Two vast land masses meet at these faults. For reasons unknown, stresses develop in these masses, but they are held immobile in relation to each other by the friction along the face of the crack. The stresses become progressively stronger with time, and tend to move the separate masses in opposite directions against the force of friction holding them immobile. At a certain moment, the stresses overcome the restraining forces of friction, and the two blocks suddenly shift, sending immense vibrations through the earth and up to the surface. It is these vibrations that move the ground in what we call an "earthquake."

What has eluded science, however, is the ability to forecast even approximately when and where the phenomenon will manifest itself within the earthquake belts. G.A. Eiby, geophysicist at the Seismological Observatory in Wellington, New Zealand, describes the present state of earthquake prediction thus: "Where there have been earthquakes in the past, there will almost certainly be earthquakes again. All that one can do in the way of prediction is forecast a

The shock which centered on Kakhk killed thousands throughout Iran's remote Khorasan province. Photo © Authenticated News International.

pattern over a period of about 100 years or so." If ever earthquake prediction became scientifically possible, he adds, "It would be necessary to have a very accurate idea of the position, the time and the intensity of a coming shock before evacuation or some similar precaution would be feasible. But so far, there is little hope of prediction and none of running away."

Although the science of seismology is young—the first satisfactory recordings of ground movement were made only some 75 years ago—instruments called seismographs have been developed from which scientists have deduced, along with the position, time and magnitude of an earthquake, that earthquakes generally are divided into shallow and deep, the deepest ever recorded being about 450 miles below the surface; that the point within the bowels of the earth where the shock originates is known as "the focus" or "hypocenter;" that the corresponding spot on the earth's surface is known as the "epicenter."

Scientists have also devised two scales for measuring quakes. One, commonly known as the Mercalli scale, describes 12 categories of effects a person may *feel* during an earthquake, ranging from a slight thump, to the ringing of church bells in vibrating belfrys, to massive upheavals of the ground and widespread destruction of buildings. Since it is based on the observations of persons who may be near or far from the center of an earthquake, the scale is not scientifically reliable. A better scale, from this point of view, is called the Richter scale, which measures the magnitude of a quake as opposed to the felt intensity. The difference is that a shock can have as many intensities as there are observers, but it can have only one magnitude. The strongest shock recorded since the introduction of seismic instruments had a magnitude on the Richter scale of 8¾—producing more energy than the Hiroshima bomb (magnitude 6), but less than a 300 megaton bomb (magnitude 9).

Earthquakes are really quite common. The earth's crust is shivering all the time in a series of minute motions called "microseisms" and every year there are about 500,000 quakes over the globe. About 100,000 can be felt under certain conditions and half that number can be distinctly observed without instruments. About 100 quakes are really strong and there are an average of two gargantuan quakes every year.

The casualties caused by earthquakes, however, are often disproportionate to their magnitude, as can be seen from the example of the 1964 earthquake in Alaska. Although it registered a whopping 8.4 magnitude, only about 100 were killed because Alaska is so sparsely populated. Topography is also a factor in the casualty rate. A weak shock hitting a mountainous area may of itself cause little damage, but can trigger landslides that sweep down on towns and

The Skopje, Yugoslavia quake of July 1963 split brick buildings down the middle. Photo © Authenticated News International.

villages, killing thousands, as in the Peruvian quake of May 1970 in which 50,000 died. A quake on the ocean floor can cause a "tsunami," or giant sea wave that sweeps in from hundreds of miles away and causes massive death and destruction on coastal areas. The Alaskan shock produced a wave that raced at 500 miles an hour towards California, Oregon and Japan.

In terms of lives lost, one of the most destructive earthquakes since the beginning of recorded history was a killer that hit China in the 16th century, causing an estimated 830,000 deaths. India suffered a bad one in 1737 in which about 300,000 people were killed. Improvements in construction methods have steadily cut down the toll over the centuries; the San Francisco quake caused 700 deaths but started a fire which did about 400 million dollars worth of damage. N.N. Ambraseys, of the Imperial College of Science, London, estimates that about 800,000 people have been killed by earthquakes all over the world in the period 1900-1968, with the average number killed every year

Japan suffers frequent tremors; one in June 1964 tipped entire buildings in Nigata on their sides like toy blocks. Photo © U.P.I.

now reaching some 14,000 people. Property loss over this period has been estimated at about 10 billion dollars. Underdeveloped areas with poor housing tend to suffer the most in lives lost but the least in property loss. In this period, Iran suffered 34,000 dead and about 72 million dollars in property loss; the figures for Turkey are 40,000 and 192 million dollars. By comparison, only 1,000 people died in the U.S., but the property loss was almost one billion dollars.

In the Middle East, Turkey and Iran are the most quake-prone countries, but over the centuries, most of the famous cities of the Middle East have been badly damaged by earthquakes. Antioch, for example, is probably the most quake-cursed city there ever was.

In the year A.D. 115 Antioch, now a sleepy market town in southern Turkey, was playing host to the Emperor Trajan when, on the morning of December 13 a quake struck. The shocks continued for several days and nights. In the words of one chronicler, "Trees leaped into the air with their roots, and people were tossed violently about and then dashed to the ground. Buildings were thrown up and destroyed." The Christians in the city were accused by the pagans of having caused the quake, and the bishop, Ignatius, was arrested and sent to Rome, where he was fed to the wild beasts.

Nature struck again in 458, when a disastrous quake leveled the city wrecked half the imperial palace and ignited a disastrous fire. This time the Christians were respected and the bishop, Acacius, one historian recounts, "rendered noble service in rescuing and caring for survivors." The wretched survivors, fearing aftershocks, made a 51-day pilgrimage to the local saint, the famous Simeon Stylites. The imperial government, in the manner of governments today, granted relief from taxation and undertook to rebuild all public edifices. But more was in store for Antioch.

In 526, the city was demolished for the third time in a quake which killed 250,000 people. The devastation was so great that in Constantinople the Emperor Justin I went into mourning and sent his top trouble-shooter, an army general, to help rebuild Antioch. About 2,000 pounds of gold were spent on reconstruction in the first few months after the quake.

Two years later, Antioch was flattened for the fourth time. About 5,000 people died, and the frenzied survivors tried to change their luck by renaming the city "Theoupolis—the city of God." It didn't work. In 588, a mammoth series of shocks killed 60,000, and in 1183 a tremor in Antioch and northern Syria killed 20,000. In 1872, 1,800 inhabitants of the city died in a quake which was felt as far away as Beirut and Damascus.

Jerusalem, too, has had its share of natural disaster. According to available records, it was hit by at least 84 earthquakes of damaging intensity between 64 BC and 1951. At one time or another, the Jewish temple walls, the Al Aqsa Mosque, the Dome of the Rock, the Church of the Holy Sepulchre and the city walls themselves suffered extensive damage. Elsewhere in Palestine, the town of Jerash was ruined in AD 746, Nablus suffered 30,000 dead in 1201, with only the Samaritan quarter escaping damage, and 5,000 people died at Safad in 1837 in a very strong quake.

Lebanon has been repeatedly lashed by earthquakes. Father Jacques Plassard, director of the Ksara Observatory in Lebanon, has catalogued what he calls a period of "veritable seismic crisis" between the years 306 and 551. Earthquakes and giant waves wrecked Tyre, Tripoli and Sidon in this period, and severely damaged Beirut several times. One quake which shook Beirut caught a group of thieves robbing a church known as "The Second Martyrium." Petrified with fear that the roof would collapse on top of them, the robbers ran out, waking the

In Gediz, western Turkey, an estimated 2,000 persons died in a series of quakes beginning March 28, 1970. When the earth stopped shaking, some 90,000 persons in the region had been made homeless. Photos © U.P.I.

poor who habitually slept inside. They were chased and reviled throughout the city, and when it was later disclosed that the plunderers were students from the famous Beirut Law School, the gods apparently were listening: on July 9, 551, an extremely strong quake, with its epicenter offshore from Byblos, hit Beirut, flattening the law school and killing some 30,000 people, including a large number of law students. Attempts to reconstitute the school failed.

During that quake, a great tsunami hit the coast; the sea receded for two miles, stranding ships in the shallows, and then came surging back, killing people who had taken refuge on the shore. After the tsunami there was a fire so terrible "it turned stones into chalk" and lasted on and off for six months. Justinian, that generous ruler, once again dipped into the state treasury to finance the rebuilding of Beirut, but according to the chroniclers, it never regained its former splendour and eminence.

Earthquakes also took their toll in Baalbek, damaging the town and the famous Roman ruins more than once. One shock in the year 749 dried up the cool spring east of the town for some time. In 1170, an earthquake hit the region and partly destroyed the citadel and the walls of Baalbek. According to archeologists, however, much of the damage to the Roman temples was caused by man, not nature. The Arab conquerors of the seventh and eighth centuries brought down many of the columns in order to get at the lead plugs which held the various segments together.

The towns of northern Syria have also suffered from earthquakes, Aleppo and Hama in particular. This last city was totally destroyed in 1157 in a quake which claimed 40,000 lives in the region. Destruction was so total in Hama that

after the collapse of a school in which everyone died, not one parent came to ask for his child—much the same as happened in Kakhk in 1968. Aleppo was rocked by a devastating tremor which killed 22,000 people in 1822. An incident in an earlier quake, in the 12th century, serves to show very clearly just how narrow and precarious is the dividing line between life and death. Near the small town of Al Raqqa to the east of Aleppo, 40 workers were trudging home from the fields one evening. One of them went to the side of the road to answer a call of nature. Looking over his shoulder at his companions, he suddenly saw the ground open wide and swallow them all as the earth shook and rumbled. Then the chasm closed again, and the lone survivor was left gaping at an empty road where his friends had been walking only moments earlier.

Elias Antar, an Associated Press correspondent in the Middle East, contributes frequently to Aramco World.

Havens from passing marauders, sanctuaries of God...

THE CAVES OF CAPPADOCIA

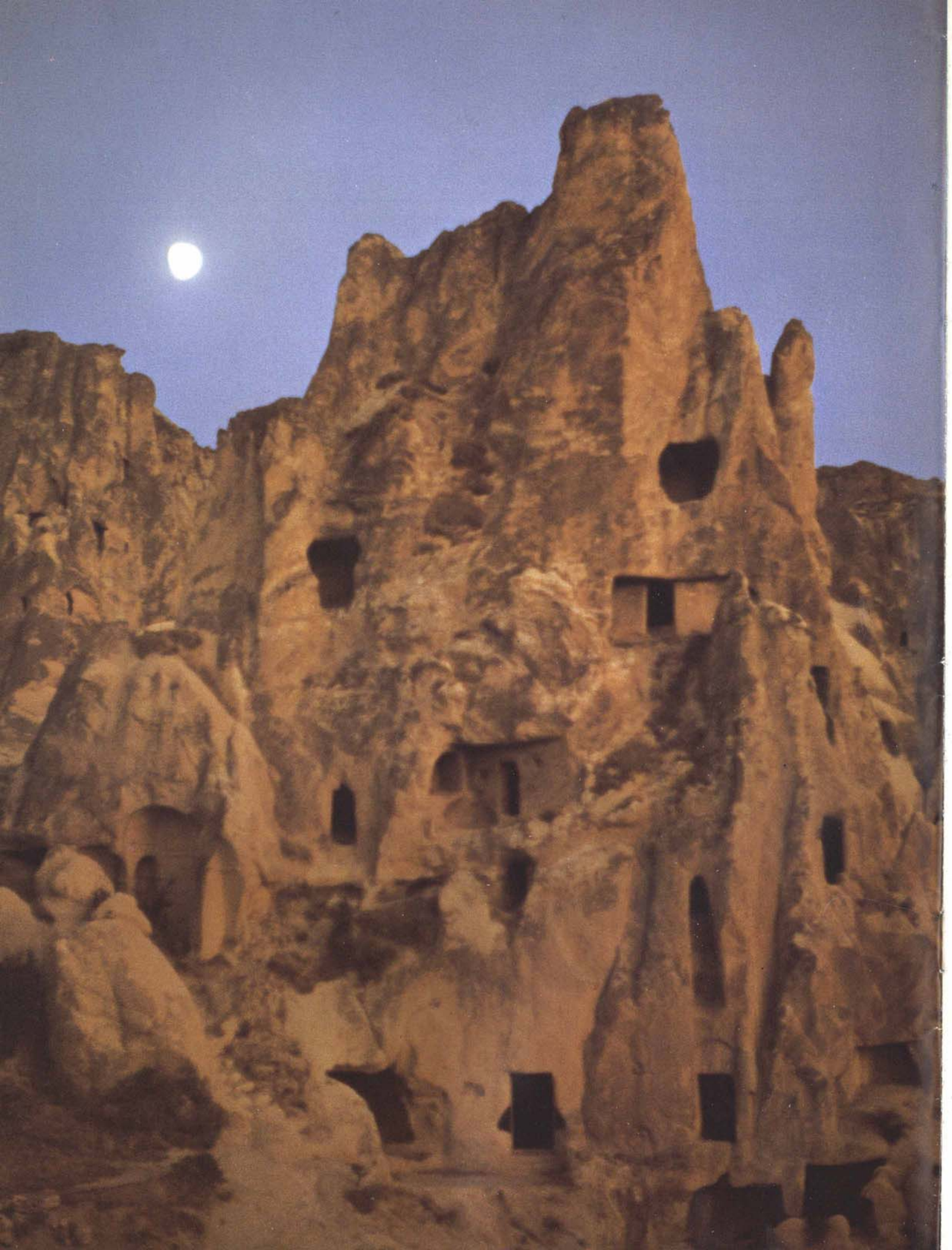
WRITTEN AND PHOTOGRAPHED BY WILLIAM TRACY

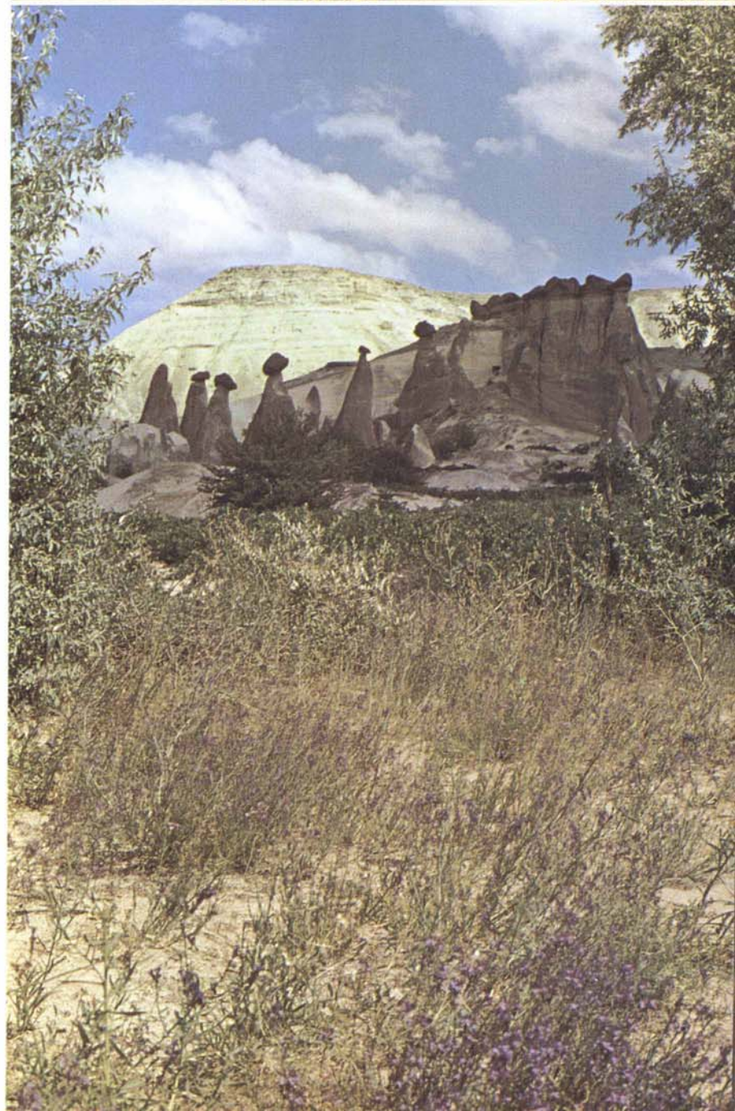
The tortured moonscape of the valley of Göreme might well have been scratched out by the devil, but the wondrous frescoed caves which honeycomb the steep ravines are surely the inspiration of God.

Turkey abounds in geological phenomena (Aramco World, March-April, 1970), but none is more curious than the massively eroded plateau of fragile volcanic tuff in Cappadocia some 200 miles southeast of Ankara.

In Cappadocia, not far from the market town of Nevshir, wind and water have carved pyramids, chimneys, columns and cones, and one's imagination can easily pick out the tusks, fins and spines of primeval creatures crouching among the cliffs. But in addition to this compelling natural beauty, there are hollowed-out caves and chapels unique in the world.

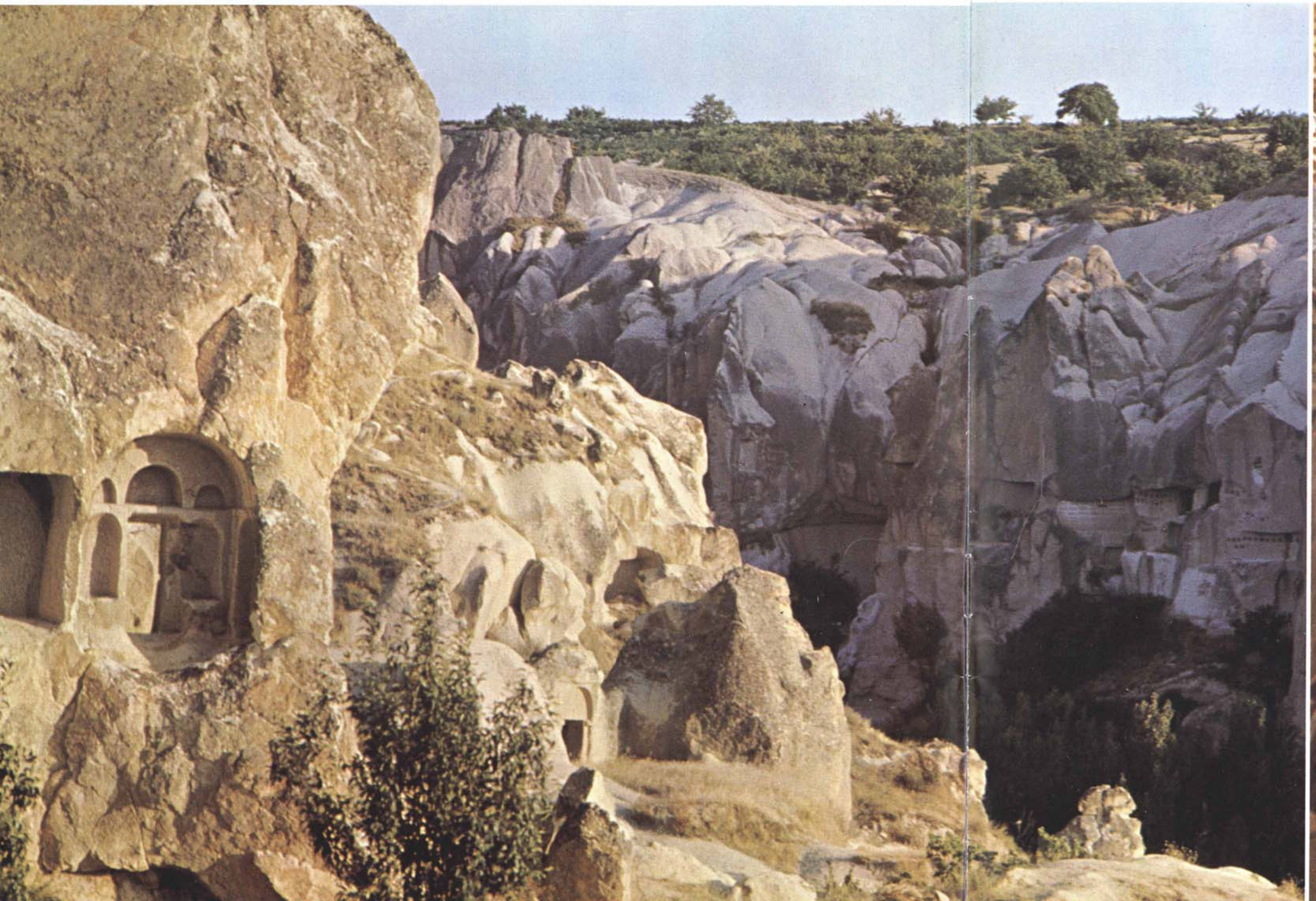
Some of these caves, located in a handful of villages scattered around the Göreme valley—Urgup, Avcilar, Uchisar, Ortahisar—are homes which the brochures call "troglodyte dwellings." Others are cool cellars in which farmers store the grapes and fruit which they coax out of the white, powdery soil in the ravines. The farmers hew new caves too, for stables, and dovecotes in rocky aeries high above the house. (continued on page 36)





Seen either in the midday sun, in the late afternoon, or by the light of a rising moon, the cliffs, cones and chimneys of the Göreme valley have an eerie, compelling beauty.

In the cluster of cave-churches at the head of the deeply eroded valley, colorful frescoes cover entire walls and ceilings with such scenes as the Emperor Constantine and the Empress Helen holding the cross, or St. George slaying the dragon. In the "Apple Church," lower right, portraits of saints adorn the arches while prophets decorate the pendentives.



But the most interesting of the caves are the chapels and cells which early communities of hermits and Christian monks carved into the soft rock. In imitation of the Byzantine architecture, the chapels are shaped like crosses and have columns, arches, vaults and domes, all sculpted from the rock but sometimes slightly askew since they are part of the mountain itself and serve no weight-bearing architectural function.

Along the walls of their cells the monks carved tables, benches, cupboards, ovens—and sometimes graves. To reach many of the rooms they cut deep passageways into the rock, devising hidden ventilation shafts and great flat round stones which one man inside could roll across a door but a squadron couldn't budge from without. Here they waited, hidden, through long silent days of siege, or retreated from passing marauders.

The chapels were decorated by the monks in brilliant—and durable—colors. Some are primitive geometric patterns in red ocher; later frescoes are done with powdered pigments. The monks covered every inch of walls and ceilings with iconographs of saints, Bible stories and scenes from the life of Jesus.

Cappadocia and the monks at Göreme flourished through the 13th century and then gradually declined, but their work, combined with the equally wondrous works of prehistoric natural forces, endures.

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Portraits were often full length; the anonymous artists used more freedom than was customary in Byzantine work and sometimes achieved a sense of pathos, as in the portrait of the Virgin Mary.