

HEROD THE GREAT'S CITY ON THE SEA



CAESAREA MARITIMA

By ROBERT L. HOHLFELDER

Photographs by BILL CURTSINGER

Paintings by J. ROBERT TERINGO

ASSOCIATE ART DIRECTOR

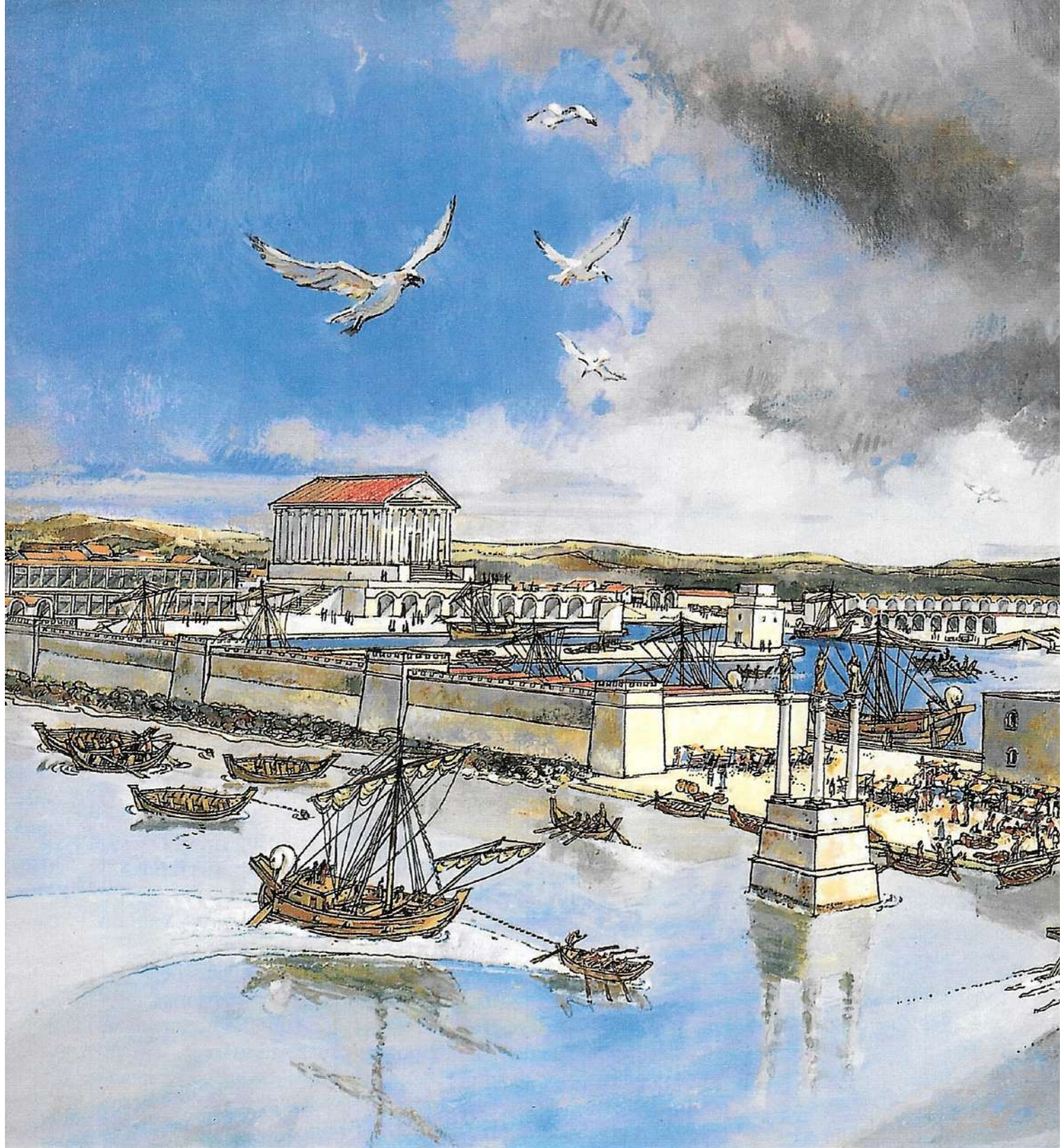
THE SEA crashing on the beach woke me at 4:30 a.m. During the night a storm had moved in from the Mediterranean. I looked out my window to see five-foot waves rolling onto the beach near our dormitory at Kibbutz Sedot Yam on the Israeli coast between Haifa and Tel Aviv. No diving today.

My real worry was our diving barge. Had the anchors held? Or would we find the platform of Scandinavian pine frames, plywood, and oil barrels scattered in pieces along the shore, putting us out of action for the rest of the summer's excavations?

We piled into a van for the short drive to the warehouse headquartering our expedition—archaeologist colleagues John Oleson of the University of Victoria in British Columbia, Lindley Vann of the University of Maryland, and I. Project director Avner Raban of the University of Haifa met us with the news: “The waves flipped the barge. It’s holding steady, but the two seaward anchors are gone.”

I saw barrels bobbing in the surf. No telling how much else was left. “Can we save it, Avner?”

The harbor Herod built, outlined by underwater shadows, lies in shallows off the Israeli coast (left). Some 2,000 years ago, Caesarea Maritima welcomed ships like the one carved in carnelian (above) to its harbor, called Sebastos. Featuring innovative design and hydraulic concrete, this building feat by a king given to grand gestures set a standard for harbors to come.



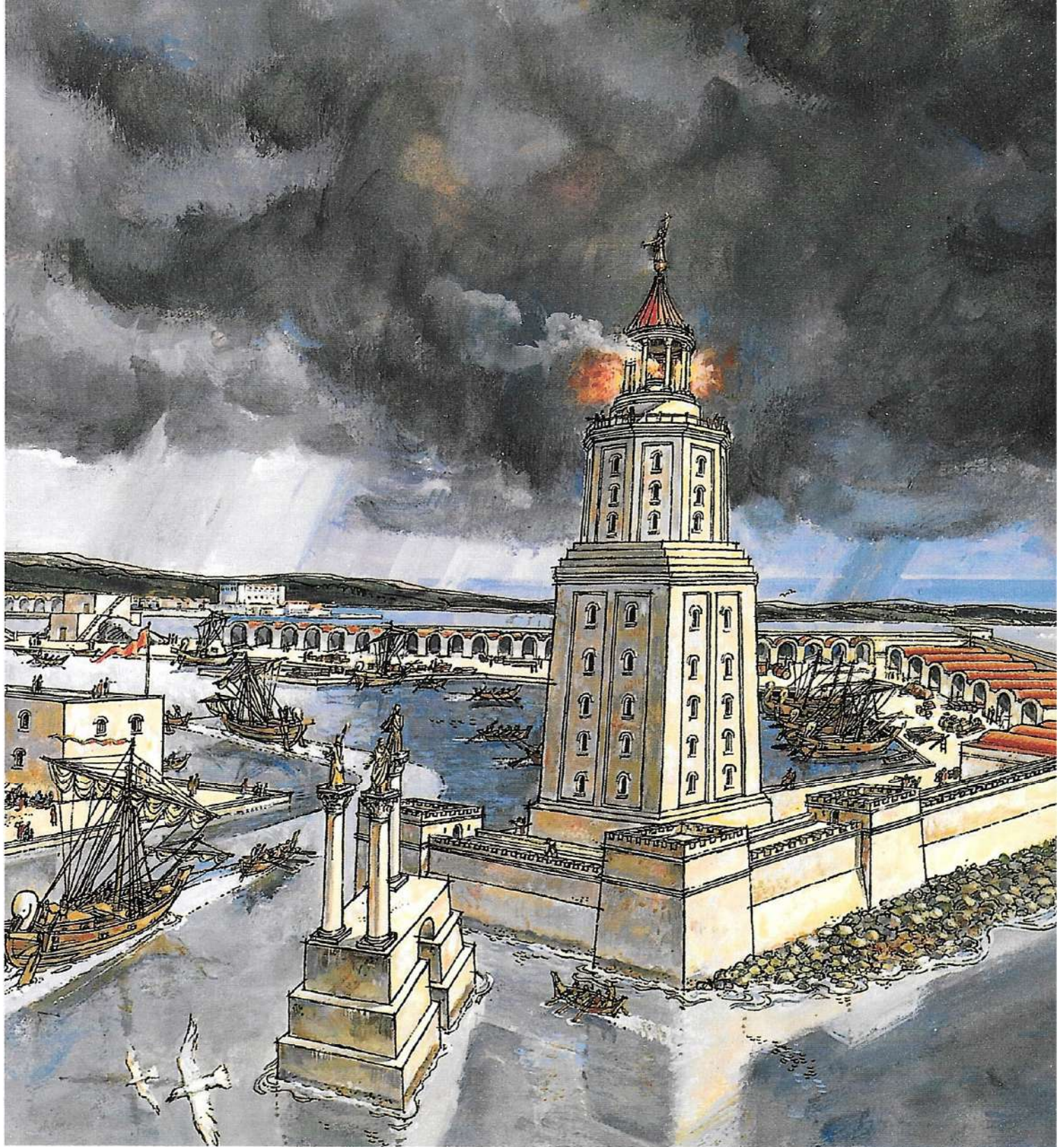
A monumental work, city and harbor were constructed on an unstable, storm-battered shore at a site lacking a protective cape or bay. Herod the Great, King of Judaea from 37 to 4 B.C., named the city Caesarea for his patron, Caesar Augustus, Emperor of Rome.

Freighters sailed up to but

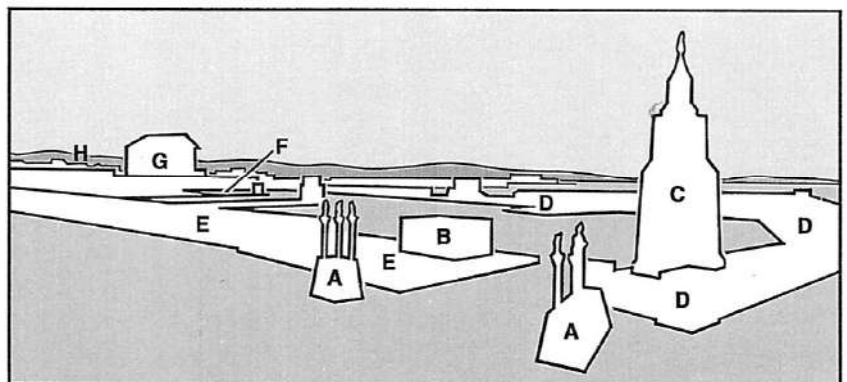
not into the harbor, where they were met and towed in. Two towers topped by six colossal statues **A** marked the entrance. In the harbormaster's building **B** ship's taxes were collected; a chain gate may have controlled entry. Wood or oil fueled the fire of a lighthouse **C** that guided ships to the port by day or night. Storage vaults lined the 600-

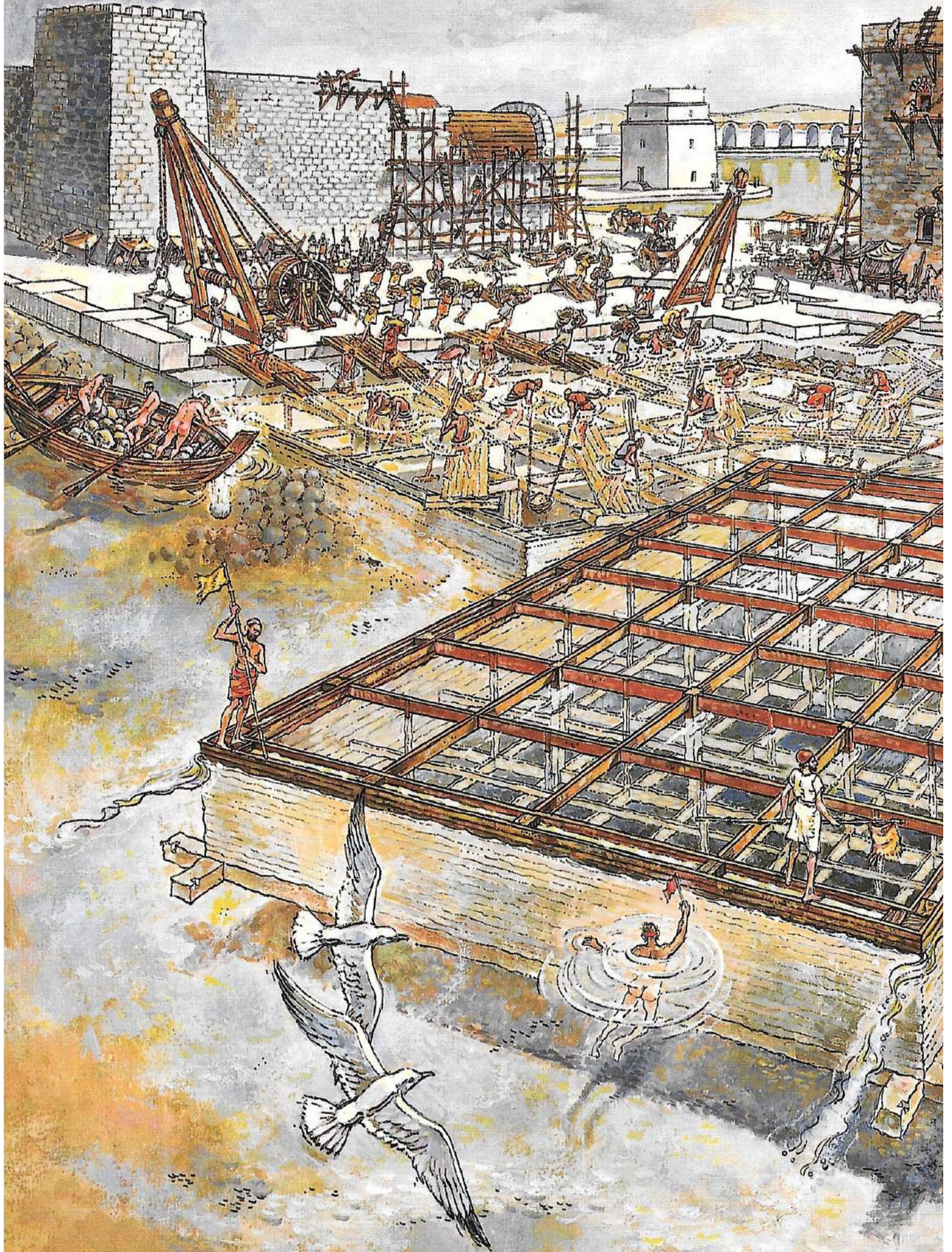
yard-long south breakwater **D** and the 300-yard-long north breakwater **E**. An inner harbor **F** enabled ships to anchor at the base of the temple to Augustus and Rome **G**.

The project challenged the ingenuity of Rome's most skilled engineers. Among innovations not depicted: a subsidiary breakwater that paralleled the



southern mole and helped dissipate the impact of waves. A sluice system periodically flushed the harbor to prevent silting, a problem exacerbated by a strong south-north current that carries massive quantities of sand from Sinai. Augustus' second-in-command, Marcus Agrippa, made a state visit to Caesarea H in 15 B.C.







THE KING . . . overcame nature," wrote the Jewish historian Josephus.

Crucial to success was a corps of professional divers. Although capable of free diving 90 feet or more, they only worked in depths of nine to twelve feet at Caesarea. Ancient ships drew as little as six feet.

Concrete blocks, some weighing 50 tons, anchored the north breakwater. Double-walled wood forms constructed near shore were towed into

position over a foundation of boulders on the sandy bottom. Waterproof mortar packed between the double walls sank the form. Workers lowered concrete in baskets. When set, the foundation was paved with stone. A rubble barrier at the seawall barred undertrenching currents. Volcanic ash, key ingredient in hydraulic concrete, and wood for forms were imported, probably from Italy. "There was no room for mistakes," the author says.

He looked at the waves. I could see he was thinking of other rescues during his Israeli navy career. "Too risky; we'll have to wait."

For two days our staff and scores of volunteer divers from around the world stood by. As an explorer of submerged coastal settlements like Caesarea Maritima, you learn to expect days lost to storms.

As soon as the seas abated enough to let our Zodiacs—outboard-powered inflatable dinghies—out of the modern fishing harbor, we towed in our upside-down barge and, with lines to a tractor ashore, flipped it. Everything topside was gone. But the hard-to-replace timber frames were intact.

Steve Breitstein, our operations director, set search-and-repair teams to work. Two days of scouring the ocean floor recovered everything but the 12-volt battery that powered our radio and night-warning beacon. A week saw the barge once more in position, fully operational. This time the sea had

been easy on us. Next time. . . ? The Mediterranean is a demanding partner.

SIX YEARS EARLIER, in 1978, when I first sailed to Israel from Greece, my mind was not on the frustrations of underwater archaeology. Filling it were the glories of an ancient city, my destination. Two decades before the birth of Christ, Herod the Great, King of Judaea, set out to create an international metropolis on the coast of Palestine where no major city had ever stood before. In a career marked by grandiose building projects—the Temple in Jerusalem, the winter palace in Jericho, the lofty Dead Sea citadel of Masada—this was to be his crowning achievement: Caesarea Maritima, rival to Alexandria in the eastern trade, a city in opulence and magnificence worthy to be named for Herod's patron, Caesar Augustus, master of the Roman world.

We don't know when the dream of Caesarea first came to Herod. It may have happened during his



Caesarea links East with Rome

COINS of the realm include a bronze piece (top) struck at Caesarea in the second century A.D. It shows Tyche, goddess of fortune, who personifies the city. Another bronze coin (middle left) marks Caesarea's founding. Not every city minted coins; that

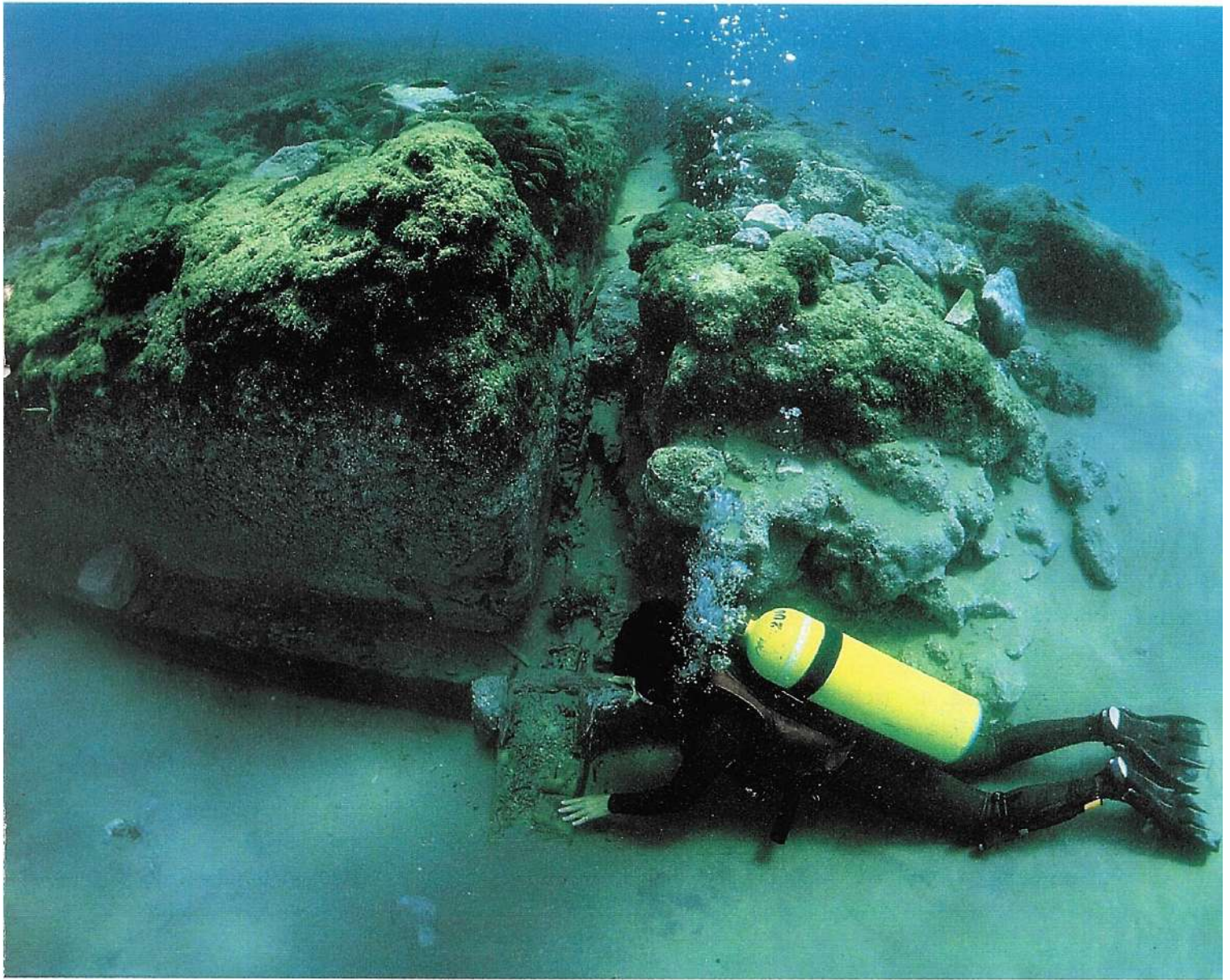
Caesarea did reflects its status. Coins, often a propaganda tool, portrayed an "official" version of events. An A.D. 70 bronze Roman coin (middle right) celebrates victory over the Jews while the war was still being fought. A silver coin of the same year (bottom) honored Emperor Vespasian. Caesarea was on a major east-west trade route (map); Byzantium and Rome lay 20 to 60 days away by sail. The harbor handled local products—wine,

flax, and grain—and silk and spices via caravan from Asia. Herod hoped Caesarea would supplant Alexandria as the region's premier port. The gamble failed. His harbor, built on a fault, started to sink soon after completion.

Following Herod's death, Rome was stuck with more harbor than needed and let it deteriorate. The Byzantines revived it. A diver (top right) examines part of a form used to cast a concrete block.



A RESEARCH PROJECT SUPPORTED IN PART BY YOUR SOCIETY



NGS CARTOGRAPHIC DIVISION PAINTING BY CHRISTOPHER A. KLEIN; DESIGN: DAVID E. CHANDLER; RESEARCH: MICHAEL NICOLLS, LINDA R. KRIETE; PRODUCTION: ELLEN J. LANDSMAN

meetings with Octavian, who in 27 B.C. would become Augustus, the first emperor of Rome. Herod had been a loyal follower of Mark Antony, Octavian's enemy in Rome's civil war, but switched his allegiance after Antony's defeat.

In a diplomatic stroke Herod not only saved his own life, persuading Rome's new master that he would be a dependable client king, but he also acquired new territory on the coast of Judaea and Samaria. It included this strip of sand where the ruins of a Phoenician settlement stood, together with an ancient roadstead. On this site Herod would establish a city majestic enough to impress even an emperor of Rome.

CAESAREA would become as rich in history as in monuments. From this capital Pontius Pilate, notorious in Scripture for condemning Christ, ruled Roman Judaea. The Apostles Peter and Paul preached here, and Paul languished two years in prison. Here Jews first revolted against Rome; Arabs besieged Byzantines; crusader armies fought Saracens. Until its destruction by the Mamluk sultan of Egypt in the late 13th century, the city stood center stage in a region always a world crossroads.

Parking beside tour buses that in their dozens bespoke the popularity of Caesarea as one of Israel's tourist magnets, I climbed a promontory successively crowned by a tower that preceded Caesarea, a crusader citadel, Turkish fortifications, and the Harbour Citadel Restaurant, which serves today's many visitors. From the observation platform atop it I looked out over rolling

dunes that cover chapters of the city's past.

Landward spread the massive crusader walls and moat cleared by Israeli archaeologists in the early 1960s. Within them lay vestiges of a medieval cathedral, ancient shops, mills, fountains, columns—even the mosque of a colony of Bosnian villagers who dwelt amid the ruins until 1948. Beyond them extended the far larger city of ancient and Byzantine times, still hidden by sand.

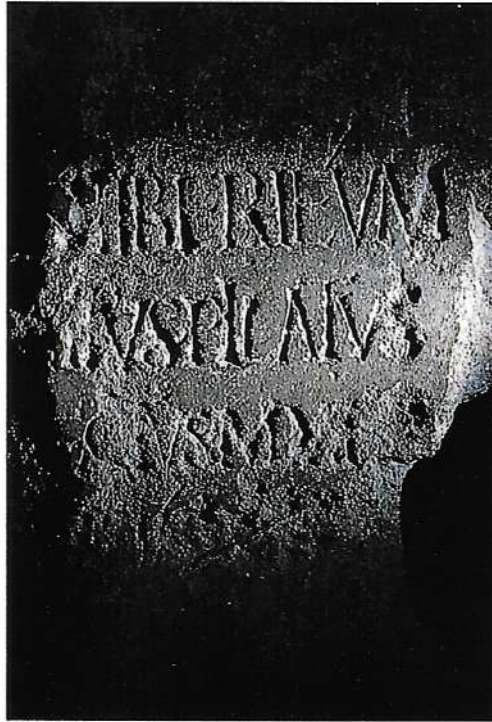
To the south, between the crusader walls and a restored Roman theater, I could see the row of vaults where archaeologist Robert Bull of Drew University in 1972 had discovered a sanctuary of the god Mithras. Northward, stacked like matchsticks, Roman columns jutted from shore. They probably were part of a crusader harbor, built in the 1250s when King Louis IX of France himself labored on the fortifications. Beyond ranks of walls that overhang waves threatening to devour them, I made

out distant lines of the city's aqueducts marching to their water supply.

Turning seaward, I discerned the outline of the two artificial breakwaters that formed the remarkable harbor of Herod's city. The southern one stretched west from the restaurant and turned north—about 600 yards in total length. The second one extended due west from the shore for about 300 yards. Both now lie beneath the sea, victims of a submerging coastline.

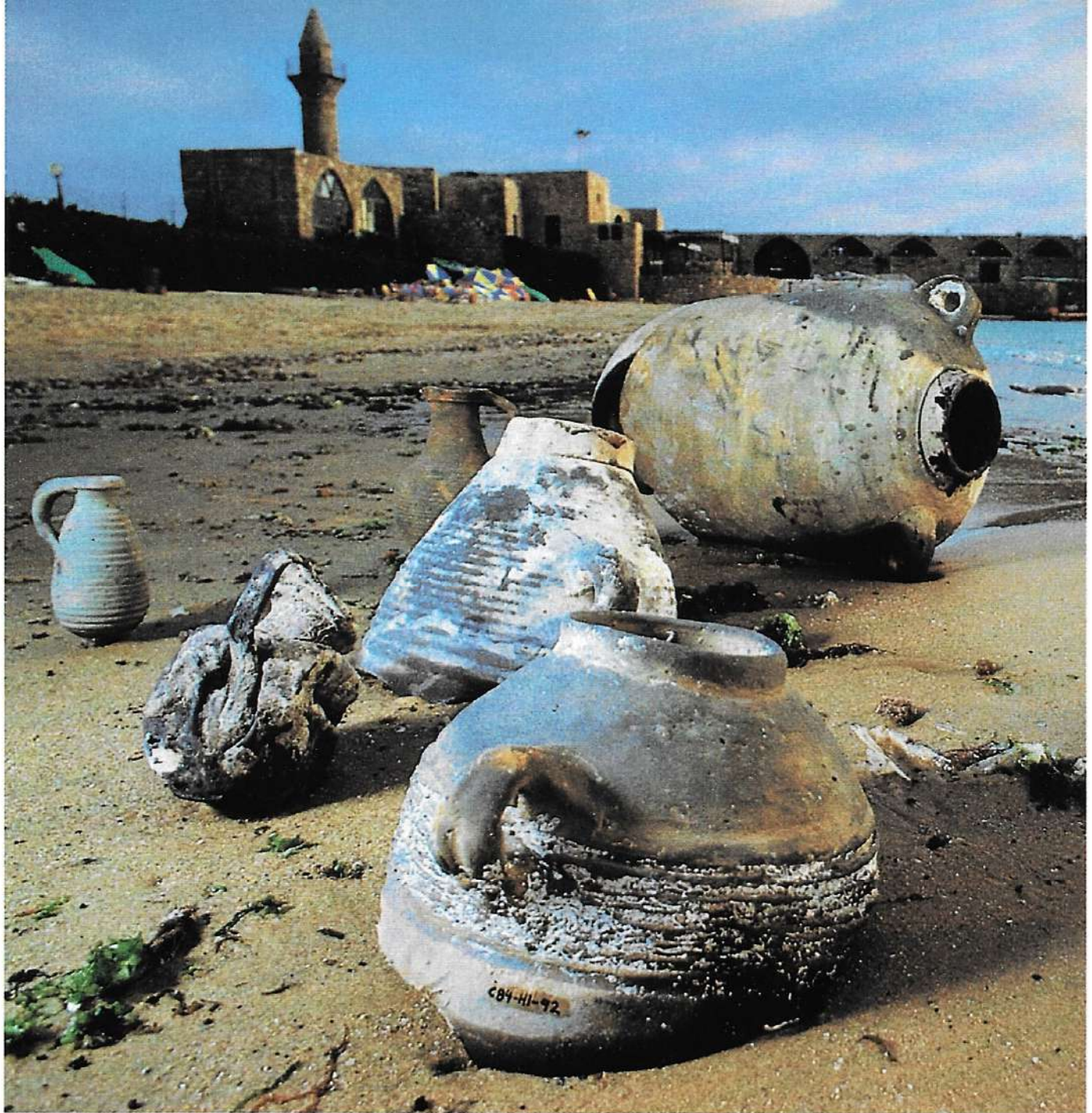
The size of the site amazed me, as well as how much of the harbor was still visible. Although 2,000 years had passed, I could conjure an image of Caesarea's construction.

Herod was an impatient man. He must



Emblematic of a pagan past, a five-and-a-half-inch bronze Jupiter (right), recovered underwater, was a household ornament. Caesarea's Christian tradition is represented by a stone, once affixed to a temple, bearing the name Pilatus (above). This is the only archaeological evidence of Pontius Pilate, the Roman procurator who tried Jesus Christ.





have directed much of the work himself. There could be no mistakes, no delays. Work proceeded at a feverish pace, thousands of conscripted laborers, speaking a babble of tongues, toiling in summer's oppressive heat and winter's biting winds.

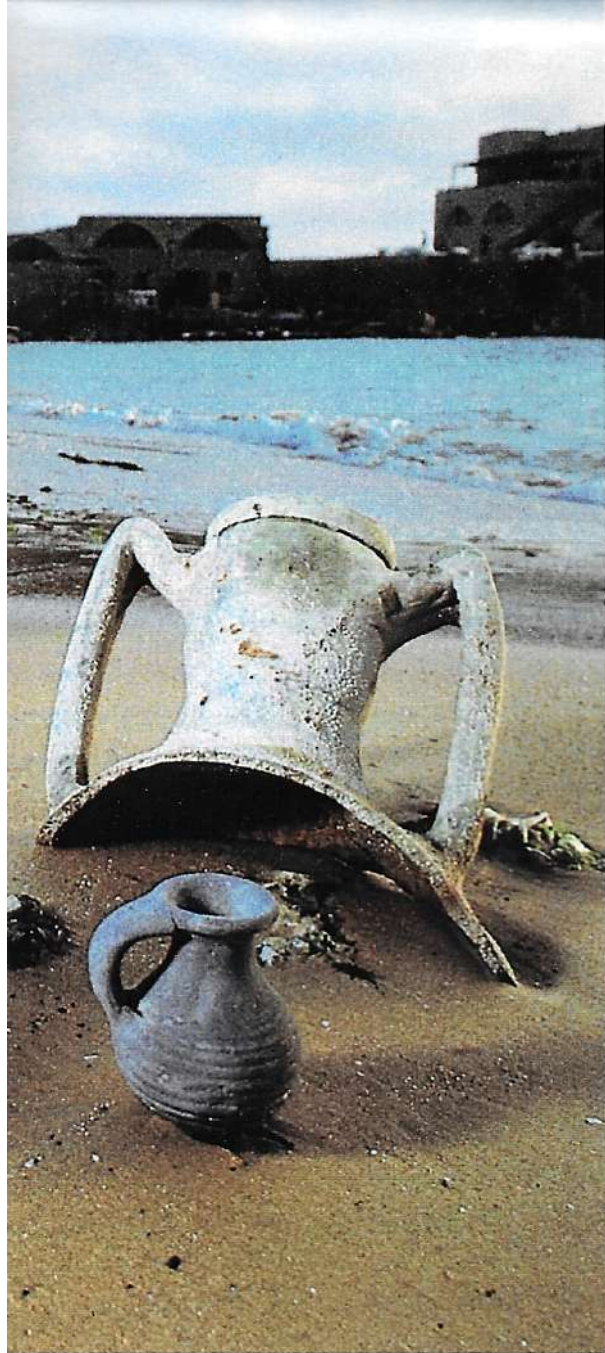
He ordered his city to be laid out on the Roman grid plan: a forum, baths, government offices, temples, tenements within the walls, villas outside. Local quarries furnished some materials. Fine marble and statuary arrived on Roman merchantmen.

South of the city center Herod erected a

huge theater on a promontory with a spectacular view of the sun setting into the sea. In the eastern precincts he built a hippodrome, or circus. Here in 9 B.C. he staged elaborate games to dedicate his city. Later the hippodrome may have witnessed mass deaths of Jewish prisoners to mark the end of the first Jewish revolt, A.D. 70, which had begun four years earlier with the slaughter of 20,000 Caesarean Jews.

A Roman-style city required enormous amounts of water for its public baths, reflecting pools, and fountains. Unfortunately, the springs that would feed an aqueduct were nine miles distant, in the foothills of Mount Carmel. To reach them, thousands of laborers armed with picks, hammers, and

National Geographic EXPLORER will telecast "Caesarea Maritima: Herod's Harbor" at 9 p.m. EST, Sunday, February 15, on SuperStation WTBS (check cable listings).



Castaways, pottery pieces dumped in the harbor have been recovered by the ton. These amphora sherds and smaller vessels (**left**) are testaments to the volume of Caesarea's trade. To recover such artifacts, divers use a vacuum hose, here uncovering the mouth of a pot (**below**). Finished in less than a decade, the harbor encompassed a total area of 200,000 square yards, making Caesarea one of the four largest Mediterranean harbors of its time.



chisels tunneled more than four miles through rock. Tunnel sections and entrance shafts today attest this extraordinary feat.

As the city grew on the shore, other engineers tackled the problems of building a harbor reflecting the imperial grandeur of Caesarea. The location Herod had selected proved a nightmare. The sandy, unstable coastline lacked coastal islands or bays that could be incorporated into an artificial harbor. No harbor had ever been built without starting off from such natural features.

A strong current and heavy seas hampered construction. Bad weather cost many days' work. Completed in less than a decade, the project displayed remarkably innovative technology: the use of hydraulic

concrete, which hardens underwater; unique wave-breaking structures and stepped revetments; ingenious sluice systems to reduce siltation. The largest anchorage constructed to that time, it could be called the world's first modern harbor.

According to the first-century historian Josephus, Herod's builders lowered huge stones, 50 by 18 by 9 feet, into the open sea to create twin breakwaters, each 200 feet wide. Atop each enclosing arm they erected a loading quay and a protective seawall, lined with storage vaults and surmounted with towers. Six colossal statues stood outside the harbor entrance, three on either side. On a podium dominating the harbor, Herod raised a temple to Augustus and



Rome. This landmark, identifying the city, could be seen from far at sea. When he had finished a harbor capable of becoming the leading transshipment port in the Mediterranean, Herod bestowed on it a regal name—Sebastos, the Greek equivalent of Augustus.

TO EXPLORE Sebastos was my goal in Israel. When Bob Bull asked if I would be interested in surveying the underwater remains at Caesarea, I jumped at the opportunity. For 16 years I had worked on other underwater harbor sites in Greece, Italy, and Spain. Here was the largest Greco-Roman harbor open to archaeological exploration—not buried under an airport like Rome's ancient Portus, silted up like Leptis Magna in Libya, or in commercial operation today like Egypt's Alexandria or Athens' Piraeus.

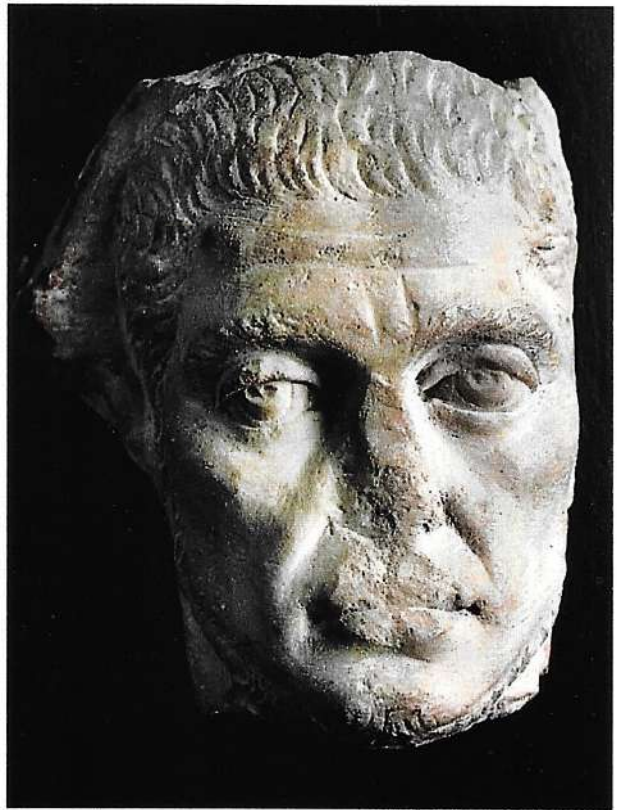
John Oleson came from British Columbia and underwater photographer Harry Wadsworth from Denver to join me. We had limited money and equipment that summer of 1978, but unlimited excitement. Since we had only six scuba tanks, which we filled at a nearby kibbutz, we could each make only two dives a day. To stretch our limited air supply, we swam out from shore on the surface with our survey equipment—often 200 yards in heavy surf—before making our descent. The major problem: to swim back after a dive when near exhaustion. I lost a lot of weight that summer. But despite limited visibility in the sand-filled waters, we managed to examine and photograph practically all the submerged ruins.

We found some of the large stone blocks mentioned by Josephus. To our surprise we also discovered huge concrete blocks on the seaward side of the south breakwater. They still carried the impressions of crossbeams from their construction forms. Josephus hadn't mentioned concrete at Caesarea, but then he wasn't an engineer.

Just outside the harbor entrance we found more concrete—remains of bases that had supported the colossal statues. At the end of the north breakwater we found more large cut stone blocks—once part of a massive tower—and remains of metal clamps that had held them in place.

More important encounters came on land: Avner Raban and Elisha Linder of the

University of Haifa, Israel's two leading underwater archaeologists, arrived to discuss a more ambitious joint effort. For years following their initial involvement with pioneer underwater explorer Edwin Link, who had surveyed here in 1960, Elisha and later Avner had been working at Caesarea, but on a frustratingly limited scale. John and I had reached the same conclusion: Only underwater exploration on an unprecedented scale could unravel the harbor's secrets and



Found in an ancient vault, these treasures (facing page) probably were buried while Arabs, who occupied the city from the 7th to 12th centuries, braced for the Crusades. Captured by crusaders in 1101, it was finally razed by Mamluks in 1291 to prevent its use by other invaders. Marble immortalizes a resident of Roman Caesarea (above).

produce significant scientific results. What if we pooled our efforts and dreams?

Those meetings marked the beginning of CAHEP—the Caesarea Ancient Harbour Excavation Project. A small season of exploration took place in 1980; the first truly international one followed the next year.

Living conditions were hardly grand—three crowded temporary structures on the beach. The ripstop nylon over rectangular

pipe frames offered some protection from sea breezes at night but none from mosquitoes or sand. Moisture condensed and collected on our ceiling, and you never knew when you'd experience a drenching rain while you slept. Our one lavatory, a public facility, was sometimes locked at night.

WATER was always a problem. One time everyone got sick, and the story was that a dead dog had been dropped into Caesarea's water supply. For weeks we had to boil our local water and rely on Israeli colleagues to bring safe water from Haifa. A turn in our one hot shower became one of life's true luxuries.

But there were compensations: excellent restaurant food, natural extravaganzas of sunsets and sunrises on the beach, the

excitement of discovery. Camaraderie born of adverse conditions helped make CAHEP the extended family it has become today—one of the largest underwater archaeological teams in the world, with divers from many countries: men and women, ranging from corporate executive to carpenter, from student to soldier, aged from 15 to 69.

Many return year after year. They've seen accommodations improve—dormitory rooms that do not leak; soft, sand-free beds; safe water; hot showers; a spectacular sea-front terrace for social events and daily briefings; memorable season's-end parties. But the moans and groans when I get people up for the long workday that starts at 5 a. m. are the same now as during our first season.

Though suffering the intestinal distress of "Herod's revenge," enduring the pitching of



our small anchored raft—nicknamed the “vomit comet”—we could see that Josephus did not exaggerate in his description of Herod’s harbor. Diving in pairs, our early team of Canadians, Americans, and Israelis cleared the bases of the twin, or yoked, towers west of the channel with suction air-lifts. Other divers cut a trench across the harbor mouth.

We came to admire solutions of Herod’s engineers to challenges of the site; they have no known precedents. To bar undertrenching of breakwaters by currents and heavy seas, they first laid a foundation of rubble on the ocean floor wider than the breakwater that would rest on it. Where engineers now use concrete tetrapods for a breakwater, Herod’s builders used rocks and concrete blocks. As wave action shifted and settled

this material and marine growth intruded, the breakwater consolidated and solidified.

Siltation has always plagued harbor builders in the eastern Mediterranean. The offshore south-to-north current carries huge quantities of sand from Sinai. Any large structure like Herod’s harbor, built out into the sea, traps sand and spurs coastal erosion. Modifying a solution used by Phoenician harbor builders at Tyre and Sidon, Herod’s engineers cut sluice channels through the main breakwater to catch water from wave crests. The water, essentially sand free, was collected in the channels and periodically released into the enclosed basin. This artificially induced current scoured the basin, flushing flotsam and jetsam and silt out through the harbor mouth.

“We might be humble enough to learn



Mass-produced ceramic lamps (left) that burned olive oil were so cheap they were discarded if broken. Bronze keys (above), including one worn as a ring, display the artistry accorded even common household objects. Excavations of the city revealed that Caesarea was built on a grid with such typical Roman amenities as a forum, theater, public baths, and a hippodrome. Because the city was sparsely inhabited after its 13th-century demise, it is a prime archaeological hunting ground. The harbor is also accessible to archaeologists—unlike Rome’s Portus, buried under an airport, or Athens’ Piraeus, which is still in use.



from the ancients," Avner Raban suggests to modern harbor engineers.

We discovered another innovation. Where the south breakwater was most vulnerable to storm attack, Herod's engineers constructed a smaller, parallel, discontinuous breakwater some 15 to 30 yards seaward of it. This first line of defense broke the force of waves before they could smash directly against the main structure.

The most surprising discovery occurred near the harbor entrance on the north breakwater. A massive concrete block measuring 15 by 11 by 2 yards had been poured, in the open sea, into submerged wooden forms. Sections of sleeper beams that supported the caisson had survived 2,000 years. Tests conducted at the University of Tel Aviv confirmed that the concrete had hardened in the water. The first-century B.C. architect Vitruvius has written that the Romans knew about hydraulic concrete. But before our discovery, no examples of its use on such a massive scale had been found.

HOW DID HEROD'S engineers perform this feat more than 300 yards from shore? Consider the following scenario. It may have happened this way.

Divers trained to free dive carrying weights in their hands took turns descending to the ocean floor a dozen feet below. They had only a couple of minutes to smooth the bottom where the breakwater would go before they had to yank on the safety ropes around their waists and begin their ascent. Rocks too large to move by hand were lashed with ropes and hauled out of the way by cranes aboard a construction barge.

When these divers, descriptively called *urinatores*, reflecting a physiological response to prolonged submergence, had cleared about 250 square yards and laid a rubble foundation, sailors in small boats bent to the oars to tow a large form out from shore. Workers filled the space between its double walls with a mortar mixture to overcome the wood's buoyancy and seal the form. They used iron chains to guide and control its descent.

Again descending in relays, the *urinatores* checked the form's location and repaired any damage. Cranes shifted it slightly to ensure that its long side was perpendicular to

the shore. A dredge piled rocks and sand around the base to stabilize it.

Hydraulic concrete, including the critical ingredient tuff—a fused volcanic ash—probably from the Mount Vesuvius area in Italy, was lowered in baskets and dumped into the form. Engineers sent by Augustus to supervise the construction took no chances with local substitutes. They brought with them the ingredients for this new building



Built to Herod's order to supply water to Caesarea, an aqueduct (facing page) from Mount Carmel nine miles away was subsequently enlarged. A separate aqueduct had to be added in the fourth century A.D. to meet the city's expanded needs.

Volunteers excavate the harbor's inner basin (above); the block between two pick wielders is a ship's mooring stone.



A sunken history: The search goes on

SKELETAL TIMBERS of a Roman merchant ship from the late first century B.C. were discovered in shallow water (left). The vessel hit offshore rocks and washed in. The 130-foot-long section of hull suggests the ship could carry 200 tons of cargo. Greek symbols for the number 1,750 (below left) scratched on the hull frame may have been the work of a stevedore taking inventory of the amphorae on board.

Subsequent expeditions instituted by the Caesarea Ancient Harbour Excavation Project, or CAHEP, will continue the search for other ships that never made it to port, focus on a systematic excavation of coastal buildings, and attempt to locate the eastern gate and the original Jewish quarter of Caesarea to better understand the city's layout.

Funds permitting, the author and his colleagues hope to build a working scale model of the harbor. "Then, we'll really see how it all worked," says Hohlfelder, professor of history at the University of Colorado.

What's highest on his wish list? "To find a shipyard," he says. "We're certain a harbor of this size had one. It would tell us a great deal about ancient shipbuilding."

CAHEP, a project organized in 1980 as an international consortium of universities, is headed by Avner Raban of the University of Haifa.



material, even for the wooden forms. After a wait of weeks for the block to set beneath the sea, the cranes recovered as much of the form as possible to be used again on the next foundation.

The south breakwater also had innovative features. Here Herod's engineers lowered huge blocks of concrete or stone onto a foundation course prepared by urinators. We found some blocks even larger than the ones Josephus described, positioned where wave attack from winter storms proved most violent. The outer face of the breakwater seems to have been revetted, with courses of blocks stepped from the ocean floor to the surface. This served to weaken the undertrenching wave action and direct wave energy back to sea to minimize the next incoming swell.

We also investigated the bay south of the main Herodian harbor. During fair weather it could be used by merchantmen for off- and on-loading cargo from warehouses lining the 500-yard-long quay. Here we found our earliest artifact—dating from about 1200 B.C.—a stone anchor from some Bronze Age ship that had put in here long before any permanent settlement existed. Anchors from all periods of Caesarea's history dot the floor of this bay. As an adjunct facility, it doubled the port area of Sebastos. Josephus was correct, claiming that Caesarea's harbor rivaled Piraeus in size.

On land our excavations within the crusader fortifications in 1983 and 1984 uncovered an inner harbor connected to the outer one by a channel. This basin, not mentioned by Josephus, had a working area of about 10,000 square yards, one-twentieth the size of the outer harbor. Built earlier by a local tyrant named Zoilus, it ultimately would become a haven for Herod's fleet of warships—another reason to select this site for Caesarea.

Augustus himself never visited the city that honored him, but his second-in-command, Marcus Agrippa, did in 15 B.C. What a grand occasion! The Roman entering the harbor to meet Herod in the inner

basin at the foot of the temple to Augustus and Rome. The ceremonial greetings on the quay, then the pair going into the temple to pray to or for their mutual patron. A public relations event of the highest order. And, in the eyes of imperial Rome, cementing the image of Sebastos as a vast allied naval station for use in any crisis.

Many scholars have discounted Josephus' account of Sebastos, none more critical than W. M. Thomson. In 1861 he wrote of the "magniloquent Josephian hyperbole" that could not be read without a smile. We now view Josephus differently. We know how sophisticated and modern Herod's harbor actually was. Each season of fieldwork makes us more aware of its 20th-century, perhaps even its 21st-century, design.

From the tons of artifacts uncovered by our volunteer divers, we know that Sebastos was still operating in the mid-seventh century, when resupply by sea enabled the Byzantines to hold out for seven years before falling to the Arabs. Crusaders reopened a small harbor here after they took the coast in 1101. It was the last position in the ancient city to fall to Islamic counterattack in 1291.

I CONFESS I had hoped to recover one of the colossal statues Josephus mentioned, a long-held dream. The discovery in 1972 of two bronze statues off the southern Italian coast confirmed that the Mediterranean still yields such treasures (see the June 1983 GEOGRAPHIC). In 1981 we did find a lead statue of Aphrodite; the next year, a bronze Jupiter holding an eagle—alas, neither more than five and a half inches in size. "Have our colossi shrunk over the centuries?" I asked Avner. Probably Caesarea's colossi suffered the same fate as the Colossus of Rhodes—cut and melted down for reuse of the metal.

Summer of 1987 will give us another chance to find our Colossus of Caesarea. Volunteers from all over the world will again join our staff to continue exploring this international capital with its "modern" harbor. We will excavate a first-century B.C. Roman shipwreck, a victim of offshore rocks. Within the crusader fortifications we are going to search for the original Jewish quarter of Herod's city. The story of Caesarea on the sea is not yet complete. More surprises lie ahead. □

FOR COOPERATION IN PHOTOGRAPHING ARCHAEOLOGICAL OBJECTS IN THIS ARTICLE, THE GEOGRAPHIC THANKS THE FOLLOWING—CAESAREA MUSEUM, KIBBUTZ SEDOT YAM: PAGE 261; 264, COINS, TOP AND MIDDLE LEFT; 275, KEYS. MUSEUM OF ANCIENT ART, HAIFA: 264, COINS, MIDDLE RIGHT AND BOTTOM; 273; 274, LAMPS. ISRAEL DEPARTMENT OF ANTIQUITIES, JERUSALEM: 268; 272. CAHEP COLLECTION, UNIVERSITY OF HAIFA: 269; 270-271.