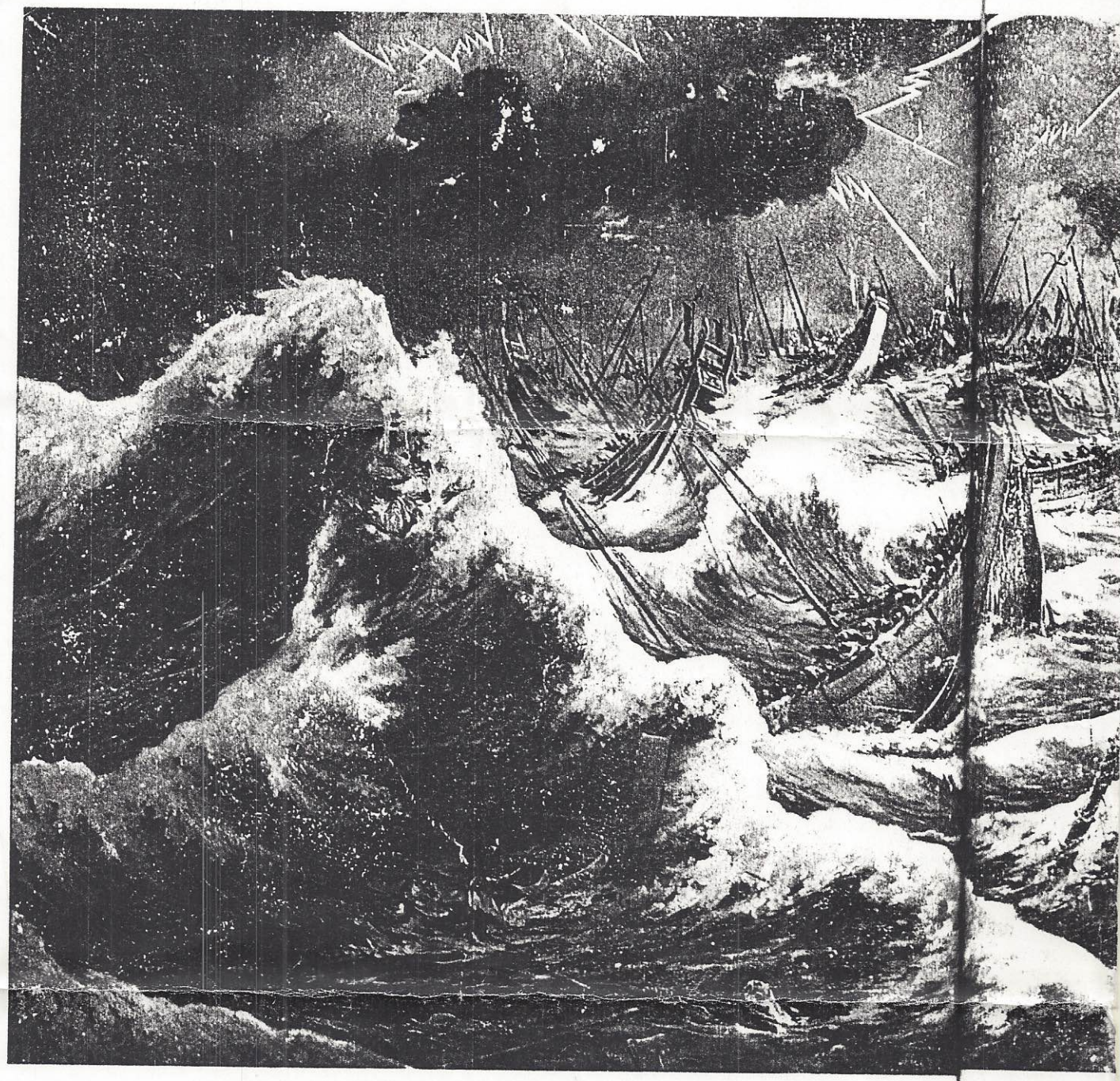


The Lost Fleet of Kublai Khan

A "DI
Ja
w

sinking 4
lives—th
back Kub
Thus was

A "DIVINE WIND," known to the Japanese as kamikaze, overwhelmed a Mongol invasion fleet off Japan in 1281, reportedly sinking 4,000 ships and claiming 100,000 lives—the second such storm to turn back Kublai Khan's plans for conquest. Thus was born the kamikaze legend.

By TORAO MOZAI

Photographs by
KOJI NAKAMURA

Paintings by ISSHO YADA
MONGOLIAN INVASION MEMORIAL MUSEUM, JAPAN

NEVER BEFORE in history—and perhaps never to this day—had such an armada been assembled. It numbered 4,400 ships with 142,000 troops aboard, and their orders were simple: Sail from ports in China and Korea, invade the islands of Japan, and conquer them in the name of the great Mongol emperor, Kublai Khan.

Instead, they themselves were conquered, not by naval action but by a storm so terrible that even today Japanese refer to it as *kamikaze*—divine wind. The year was 1281, the Mongol fleet was virtually destroyed, and Japan escaped foreign occupation for the next six and a half centuries, until the end of World War II.

As a student of naval history as well as a professor of engineering, I have long been fascinated by the Mongol invasion of Japan. In fact there were two invasions, one in 1274 and the second in 1281, both abruptly terminated by storms (map, opposite). The 1274 invasion was on a smaller scale than the one that followed, and thus it resulted in fewer losses. Yet together the two events cost Kublai Khan dearly and dashed his dream of an overseas empire.

The disaster of 1281 occurred at Takashima, a small island off Kyushu in the western part of my native Japan. There with a skilled team of divers, scientists, and engineers, I have spent the past three summers exploring for the sunken remains of the Mongol fleet, under a grant from the Japanese Ministry of Education. So far we have recovered a number of artifacts from the fleet and have developed promising new techniques for detection of other items buried beneath the ocean floor.

JAPANESE HISTORIES offer detailed accounts of the Mongol invasions. Both were launched by Kublai Khan, whose grandfather Genghis Khan founded the Mongol Empire. The noted 19th-century Japanese artist Issho Yada devoted a lifetime to producing such dramatic scenes from the invasions as the one shown on the preceding pages and others accompanying this article.

In 1268, having conquered northern China and Korea, Kublai Khan demanded submission from Japan. The Japanese ignored the command, and the khan prepared to invade their island stronghold. Finally, in November of 1274, a fleet of 900 ships and 40,000 Mongol, Chinese, and Korean troops arrived at Kyushu's Hakata Bay.

After a day's successful fighting, the invaders retired for the night. But that evening a storm threatened the fleet at anchor, forcing the ship captains to put to sea. The storm eventually overtook the fleet, sinking 200 ships and bringing the total cost in lives to 13,500.

Despite the toll, Kublai Khan prepared another attack. By the spring of 1281 a vast armada that would consist of 4,400 ships and 142,000 Mongol, Chinese, and Korean troops began assembling in ports of China and Korea for a second assault on Japan. (By contrast, the famed Spanish Armada three centuries later numbered only 130 ships and 27,500 men.)

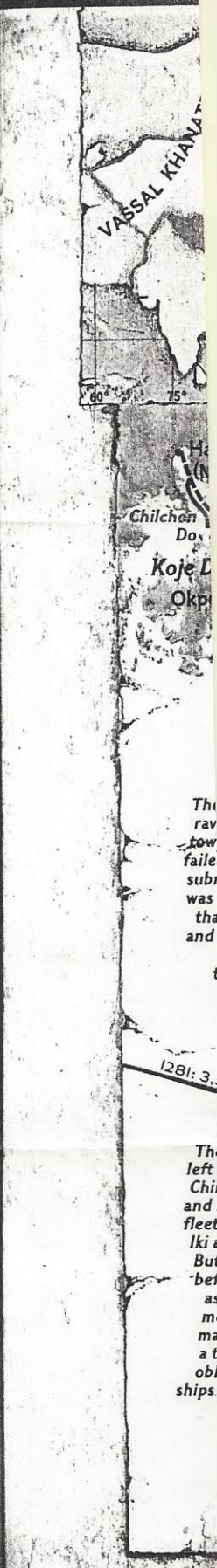
This time the Japanese were well prepared. During the seven-year interval they had built a wall around Hakata Bay, a massive structure some 2.5 meters high and 20 kilometers long.

The Mongols apparently had no knowledge of the wall; they landed the advance portion of their army directly in front of it (page 649). The close quarters robbed them of their most successful tactic—the lightning cavalry charge that had routed the finest armies of Asia and Eastern Europe.

The two armies were closely matched, and skirmishes raged around Hakata Bay. Neither side could gain a clear advantage, and at length the invaders reembarked. Sailing westward, they joined the main body of their army, which had finally arrived after a two-month delay in China. At last all the ships and most of the troops were assembled. Toward the end of July the combined force attacked Takashima and prepared to invade mainland Kyushu.

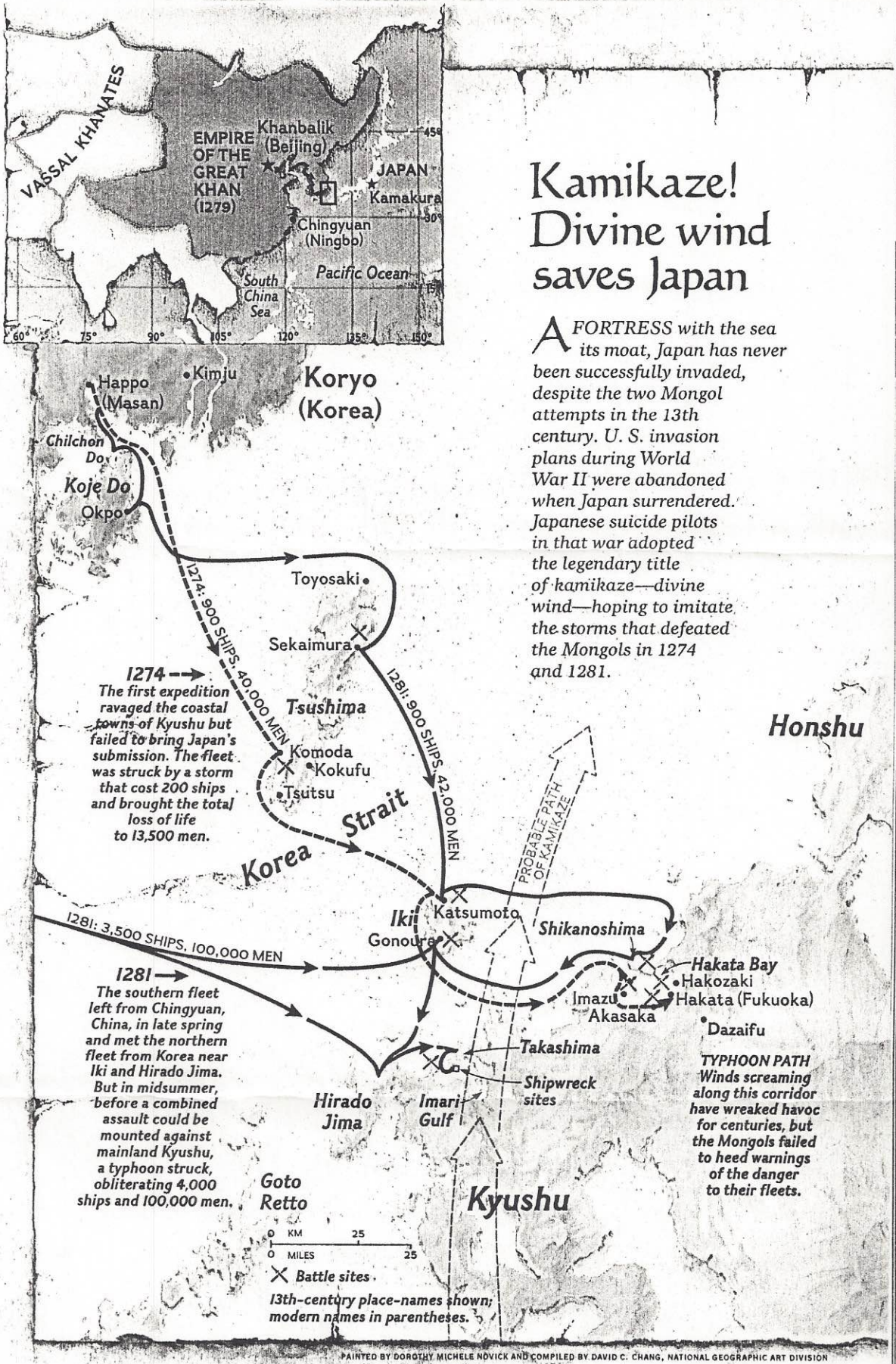
Meanwhile the emperor of Japan and other high-ranking officials besought the aid of the gods, performing elaborate Shinto ceremonies at shrines throughout the country on behalf of the defending army. As if in answer to their prayers, the divine wind struck the Takashima area in August—with devastating effect.

Estimates of the Mongol losses vary, but most accounts set the ships sunk at 4,000.



Kamikaze! Divine wind saves Japan

A FORTRESS with the sea its moat, Japan has never been successfully invaded, despite the two Mongol attempts in the 13th century. U. S. invasion plans during World War II were abandoned when Japan surrendered. Japanese suicide pilots in that war adopted the legendary title of kamikaze—divine wind—hoping to imitate the storms that defeated the Mongols in 1274 and 1281.



PAINTED BY DOROTHY MICHELE NOVICK AND COMPILED BY DAVID C. CHANG, NATIONAL GEOGRAPHIC ART DIVISION

The troop casualties probably exceeded 100,000, including those drowned at sea and others slaughtered by the Japanese on Takashima. The Mongols never seriously threatened Japan again.

FOR SEVEN CENTURIES the remains of the Mongol fleet lay largely undisturbed on the seafloor off Takashima. Fishermen occasionally brought up by hand or in their nets such items as earthenware jars, stone bowls, and fragments of porcelain, but no systematic exploration of the artifact-rich site was ever undertaken.

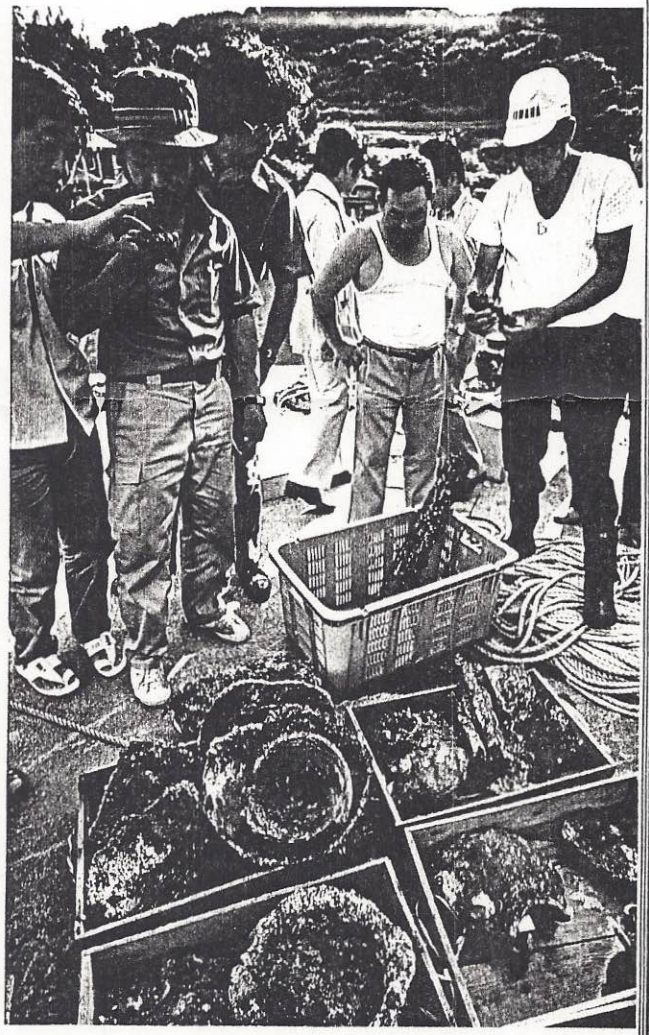
In 1980 I received a three-year grant from the Japanese Ministry of Education to develop experimental techniques in underwater archaeology, a field in which Japan has lagged behind many other countries. With the Mongol fleet in mind, my colleagues and I selected the waters surrounding Takashima as ideal for testing those new methods. One of the major problems in undersea exploration is the difficulty of seeing beneath the ocean floor.

Until recently, nonmetallic objects buried

beneath a fo
invisible eve
water detecti
scan sonar ar
archaeologist
by choosing a
excavating it

For some y
pioneer unde
sor Shinsuke
versity, Profe
the distinguis
mio Egami of

Sheathed in barnacles, *a sword believed to have been carried by a Mongol cavalry officer emerges from the bottom in the hands of divers* ***(left)****. Other artifacts recovered offshore fill cartons at Takashima's port* ***(below)****.*



ndertaken.
grant from
tion to de-
underwa-
Japan has
ries. With
agues and
ing Taka-
iew meth-
undersea
seeing be-

cts buried

mber 1982

beneath a foot or two of sand or silt were invisible even to the most sensitive underwater detection instruments, such as side-scan sonar and magnetometers. As a result, archaeologists could locate such objects only by choosing a likely spot on the seafloor and excavating it over a wide area.

For some years I had worked with Japan's pioneer underwater archaeologists: Professor Shinsuke Araki of Tokyo's Rikkyo University, Professor Yoshio Oe of Kyoto, and the distinguished Professor Emeritus Namio Egami of the University of Tokyo.

I had felt the challenge and frustrations of excavating whole areas of the ocean floor for the recovery of a few artifacts or, in some cases, no artifacts at all.

Geologists, I knew, employ a device known as a subbottom profiler, or sonoprobe, which uses sound waves to map formations of rock and sediment beneath the ocean floor. Although the instrument is designed to record massive layers of rock, I wondered if it could be used to locate smaller objects, such as buried artifacts.

I took the question to a firm in Tokyo,

NATIONAL PALACE MUSEUM, TAIWAN

The mighty Kublai Khan, *stern-faced in this portrait, ruled a domain stretching from the Black Sea to the South China Sea. His officers carried emblems of authority such as the bronze seal* ***(left)****, proclaiming its owner a leader of as many as a thousand soldiers.*

Mongol troops ***(facing page)*** *pierce the hands of a Japanese woman to pass ropes through the wounds and hang her, along with others, from the bow of a ship.*

Kokusai Kogyo, Co., Ltd., which specializes in undersea geologic exploration. Could a sonoprobe—or a Sonostrater, as Kokusai Kogyo calls its version of the instrument—be used to locate small objects buried beneath the seafloor? Kokusai Kogyo believed it could. The firm generously loaned me one of its models, and with a small team of engineers I took it to Takashima for testing.

THE PRELIMINARY results were promising but inconclusive. With the Sonostrater mounted in a chartered boat, we crisscrossed an area where Chinese and Mongol artifacts had been brought up in the past by fishermen. As the Sonostrater scanned an area as deep as 30 meters beneath the ocean floor, its black-and-white recording paper revealed layers of subsurface rock, together with smaller features that might be artifacts, scattered debris, individual rocks, or merely buried clumps of seashells. Although the Sonostrater could indeed distinguish between massive layers of rock and smaller objects, it gave few clues as to what those smaller objects were. Clearly it needed to be modified for use in underwater archaeology.

Back in Tokyo I went to see a friend, Iso Tanaka, the vice president of Koden Electronics Co., Ltd. Several years earlier Koden had developed a type of color sonar designed to locate schools of fish and to indicate their type as well as the size of the school. If we could adapt Koden's color process to the Sonostrater, we might have a truly remarkable instrument, one that could locate buried objects and give some clue as to the materials they were made of. Such a device I call simply a color probe.

Koden's engineers took on the job, and by late 1980 they had produced an experimental model. The instrument analyzes the relative hardness of buried objects by using varying wavelengths of sound, in much the same way a prism separates light into the various colors of the spectrum.

Objects made of the hardest materials, such as stone, metal, or porcelain, register on the color probe's screen as bright red. Softer materials, such as wood, appear orange, and even softer materials, such as sand and silt, register yellow or light green. At the end of the scale in terms of softness,

hich special-
ation. Could
as Kokusai
strument—
s buried be-
gyo believed
aned me one
eam of engi-
testing.

results were
ve. With the
a chartered
here Chinese
rought up in
Sonostrater
meters be-
k-and-white
s of subsur-
ller features
d debris, in-
d clumps of
trater could
assive layers
ve few clues
were. Clear-
se in under-

a friend, Iso
Koden Elec-
earlier Ko-
color sonar
and to indi-
size of the
's color pro-
t have a tru-
that could
ome clue as
e of. Such a
e.
job, and by
experimen-
zes the rela-
ts by using
in much the
ght into the

materials,
ain, register
bright red.
appear or-
ls, such as
light green.
of softness,

Like human surf, *wave after wave of Mongol warriors sweeps ashore at Hakata Bay on Kyushu in their second invasion of Japan. Unaware of the wall built by the Japanese after the 1274 invasion, the khan's advance forces landed at the same point and met with fierce resistance at water's edge. In the Mongol arsenal of weapons were poisoned arrows, maces, lassos, and javelins that could be hurled great*

distances.
wooden sh
the first in
combat, in
the defend

distances. The Japanese fought back with bows and arrows, spears, swords, and wooden shields, and with a great fierceness inspired by defense of homeland. During the first invasion Japanese warriors were hampered by their tradition of individual combat, in contrast to the Mongols' large-scale troop maneuvers. By 1281, however, the defenders knew their enemy's ways, and proved a match for the invaders.

water appears in its natural color, blue.

In the summer of 1981 we returned to Takashima with the color probe and a volunteer team of some 30 divers, scientists, and technicians. The search for the Mongol fleet had begun.

WHILE my engineering colleagues and I experimented with the color probe, our divers began recovering sunken artifacts almost at once. By means of hand tools and air lifts they scoured the ocean floor off Takashima, bringing up a variety of items including what appear to be 13th-century Chinese and Korean tools and implements.

Not all our finds were antique. In the seven centuries since Kublai Khan's fleet went to the bottom, countless Japanese and foreign vessels have followed it, not to mention seven centuries' worth of items lost or thrown overboard. So our finds include everything from a barnacle-encrusted sword, probably worn by a 13th-century Mongol officer, to a modern *tako tsubo*—an earthenware octopus trap.

The variety of older items was nonetheless remarkable. Within less than two weeks our diving teams recovered iron spearheads, iron and copper nails, stone anchors, heavy stone bowls, curiously shaped bricks, iron ingots, and quantities of porcelain and earthenware pots, vases, bowls, and dishes. Most of the ceramic artifacts had long been reduced to fragments, but a few were recovered intact.

The condition of the artifacts provided clues to their history under the sea. In general the longer a bowl or spearhead had remained on the surface of the ocean floor, the more badly it was corroded or encrusted with marine growth.

The cavalry sword offered a perfect example (pages 638-9). It had sunk in shallow water and by chance landed upright, with its point and part of the blade embedded in the sand. The buried section was in quite good condition, while the exposed portion was so heavily encrusted that it was almost unrecognizable.

With the color probe still in an experimental stage, we continued to rely on our divers for the search and recovery of artifacts. One of their most common finds, the heavy stone bowls, intrigued me. Each bowl had a distinctive notch in its rim, obviously for the purpose of pouring.

I theorized that the bowls may have been used for mixing gunpowder, since historical accounts mention the use of stone vessels in that process.

Among our most intriguing finds off Takashima were bricks. They were slightly thinner than modern bricks, and some historians believe the Mongols used them to build small blacksmith forges aboard ship for making horseshoes and repairing weapons. Other scholars maintain that the bricks were carried by Chinese troops, perhaps to build shrines ashore as soon as they landed in order to pray for victory. In 1281 the Chinese never had time to erect shrines; the bricks went down with the invaders.

During our stay on Takashima, the 4,000 islanders became increasingly fascinated with our work. By chance we had arrived during the 700th anniversary of the invasion of 1281, an event that the islanders celebrate every 50 years with a festival.

Over the years fishermen of Takashima have brought up most of the historical treasures recovered from the Mongol fleet. Some of the artifacts were sold to private collectors, but others made their way into museums such as the one at Hakata Bay, now the site of the modern port city of Fukuoka.

In a lecture I congratulated the islanders for donating a number of their finds for public display, and I suggested the time had come for Takashima to have its own museum. The museum could be furnished with the artifacts we had recovered and with others retrieved by the islanders.

Next day an assortment of about 30

Hit-and-run raiders *in a small Japanese boarding craft launch a lightning attack on the Mongol fleet as it lies at anchor in Hakata Bay. Lacking a large navy in 1281, Japanese authorities also enlisted local pirates to harass the enemy at sea. So successful were the raids that Chinese and Korean ship captains took to chaining their vessels together in long lines abreast to minimize boarding opportunities.*

posed portion
it was almost

an experimen-
on our divers
artifacts. One
ne heavy stone
owl had a dis-
iously for the

nay have been
ince historical
one vessels in

finds off Ta-
were slightly
nd some histo-
them to build
oard ship for
ing weapons.
ne bricks were
haps to build
landed in or-
1 the Chinese
es; the bricks

ma, the 4,000
ly fascinated
e had arrived
f the invasion
ders celebrate

f Takashima
istorical trea-
ol fleet. Some
rivate collec-
ay into muse-
Bay, now the
Fukuoka.
the islanders
finds for pub-
he time had
s own muse-
rnished with
and with oth-

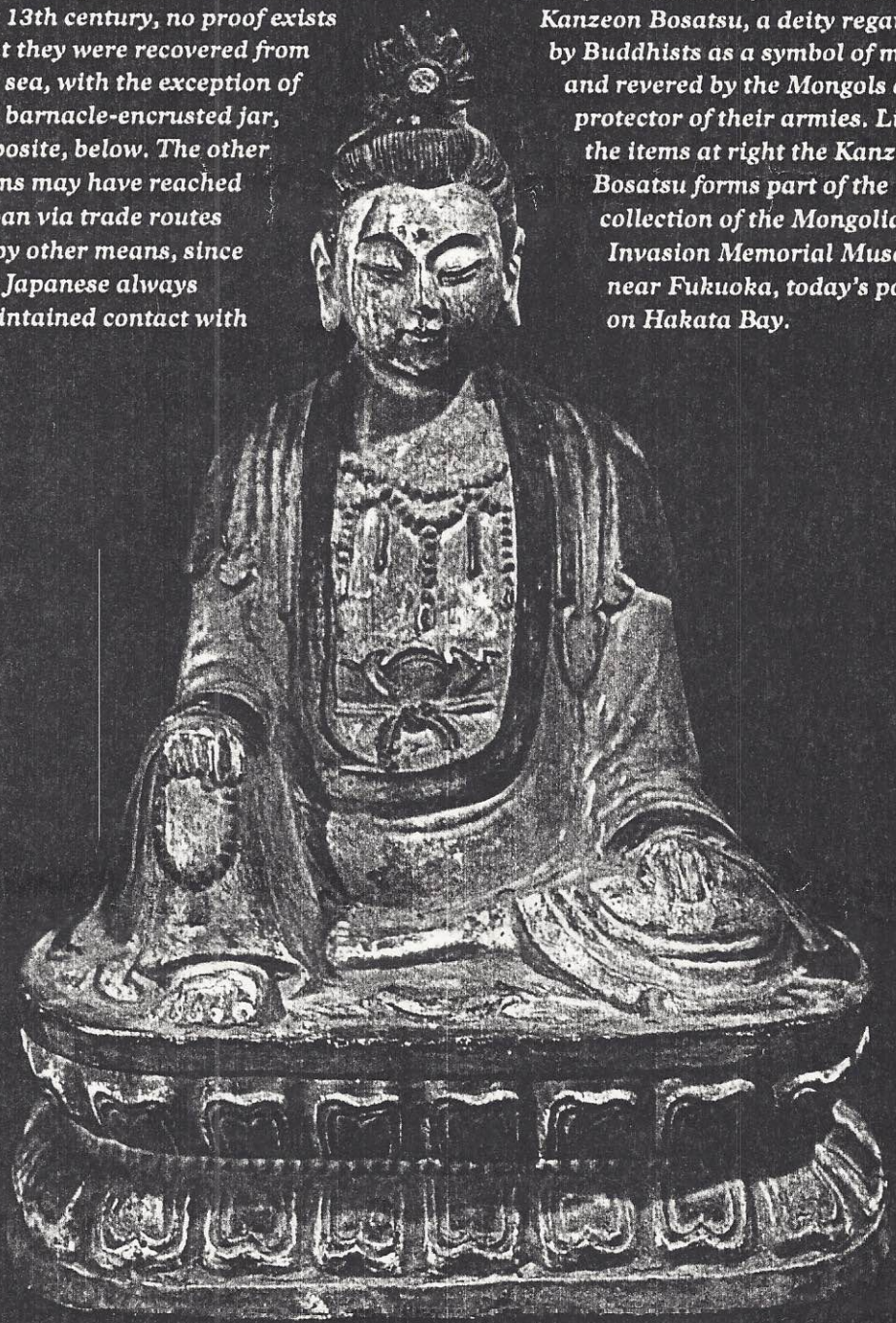
of about 30

ning attack on
in 1281, Japa-
So successful
neir vessels to-

Symbols of a doomed mission

UNTIL THE AUTHOR BEGAN a systematic search for remains of the Mongol fleet, the only artifacts recovered were those brought up accidentally in fishermen's nets. Although the historic treasures pictured may date from the 13th century, no proof exists that they were recovered from the sea, with the exception of the barnacle-encrusted jar, opposite, below. The other items may have reached Japan via trade routes or by other means, since the Japanese always maintained contact with the Asian mainland. Yet scholars agree that these artifacts are typical of the possessions the invaders carried aboard ship on an overseas campaign.

The one-foot-high statue (below) is a representation of the so-called Kanzeon Bosatsu, a deity regarded by Buddhists as a symbol of mercy and revered by the Mongols as a protector of their armies. Like the items at right the Kanzeon Bosatsu forms part of the collection of the Mongolian Invasion Memorial Museum near Fukuoka, today's port city on Hakata Bay.

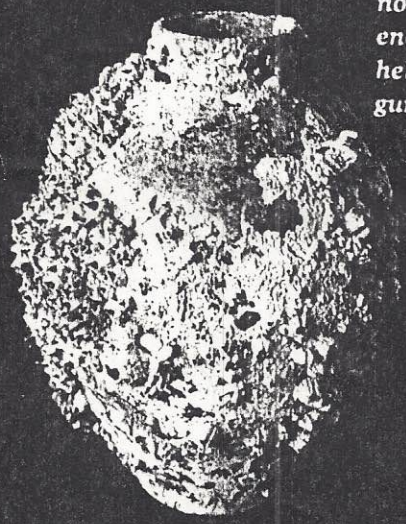


SILVER
elabora
motif su
this Mo
metal h
belonge
high-ra
officer.

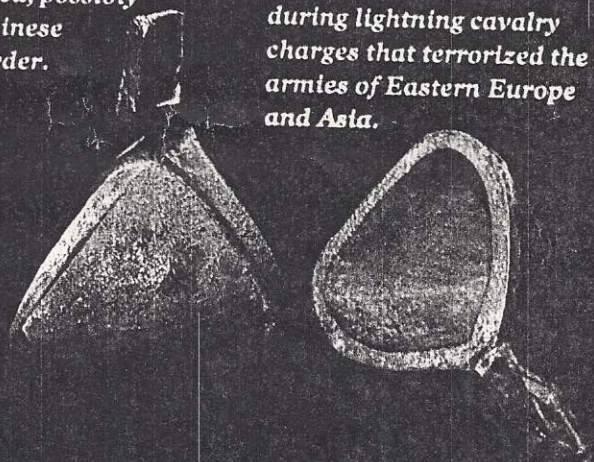
sion

nolars agree
cal of the
rried
campaign.
(below)
so-called
ity regarded
bol of mercy
Mongols as a
mies. Like
he Kanzeon
t of the
Mongolian
al Museum
day's port city

SILVER INLAY and elaborate dragon motif suggest that this Mongol-style metal helmet belonged to a high-ranking officer.



STONEWARE JAR, now barnacle encrusted, possibly held Chinese gunpowder.



IRON STIRRUPS protected the feet of Mongol horsemen during lightning cavalry charges that terrorized the armies of Eastern Europe and Asia.

ceramic artifacts retrieved from the ocean floor were donated by various islanders toward the start of a local museum.

One of the donations was an almost unbelievable treasure: a perfectly preserved bronze seal measuring 6.5 centimeters square, with an inscription engraved in the face (page 640). The seal was presented to me by an islander named Kuniichi Mukae, who had found it seven years before on one of Takashima's beaches and had tossed the curiosity into his toolbox. There the seal lay forgotten until Mr. Mukae heard my lecture, whereupon he retrieved it as something of possible interest.

Interest was immediate, for the seal was a rarity. The inscription was in a written form of Mongolian language commissioned by Kublai Khan himself. The dynasty had had no official written language until the year 1271, when the khan ordered a Tibetan monk by the name of Phags-pa to create one.

The seal must have belonged to an officer, for the inscription reads: "The seal of a leader of between one hundred and one thousand soldiers." On the back of the seal a date—"the 14th year of Zhi-yuan"—appears in Chinese characters. Zhi-yuan was the name given the era of Kublai Khan's rule, so the year was actually 1277.

From the two inscriptions we can deduce that the owner of the seal was an officer of some importance, who may have taken part in the first invasion of Japan and who probably died in the course of the second one.

AS WE PROBED the seafloor off Takashima, we gradually developed a picture of how the Mongol fleet had perished. The majority of ships, we decided, must have been anchored to the south of the island, the direction from which the divine wind had struck. As a consequence the vessels were either sunk or driven ashore along Takashima's southern coast, which is where we found nearly all the artifacts. The bronze officer's seal had also been discovered on one of the island's southern beaches.

Though Takashima's offshore waters proved to be immensely rich in artifacts, we brought up only a small fraction of what we found. Our funds were limited, and it would have been senseless to remove artifacts we knew we could not hope to preserve.

Stone and ceramic items suffer relatively little damage out of water, but those of wood or metal quickly deteriorate when exposed to air. They are safer left buried beneath the seafloor, where they have survived for centuries, and retrieved only when they can be properly cared for.

After three weeks of exploration we ceased operations and left Takashima for Tokyo, where further experiments with the color probe convinced me that the device was a potentially valuable tool in underwater archaeological research.

So it has turned out. During the past summer season the color probe has led our divers to a number of artifacts buried as much as a meter beneath the seafloor. The 1982 season has seen a variety of additional finds and has contributed substantially to our knowledge of a critical period in Japanese history.

THERE IS a great deal more to learn. We have yet to find the actual remains of a ship lost in 1281, and no one has located the 200 or more vessels that sank following the invasion of 1274. Three small islands lying between Kyushu and Korea—Tsushima, Iki, and Hirado Jima—figured prominently in one or both invasions, and their waters have yet to be explored.

The color probe has proved extremely promising, but it requires additional work. I believe that in time it can be improved to the point of defining the shape of an artifact as well as determining its location and the material from which it is made. The applications of such a device are limitless, not only in underwater archaeology but also in the other ocean sciences. The search for Kublai Khan's fleet is merely a beginning. □

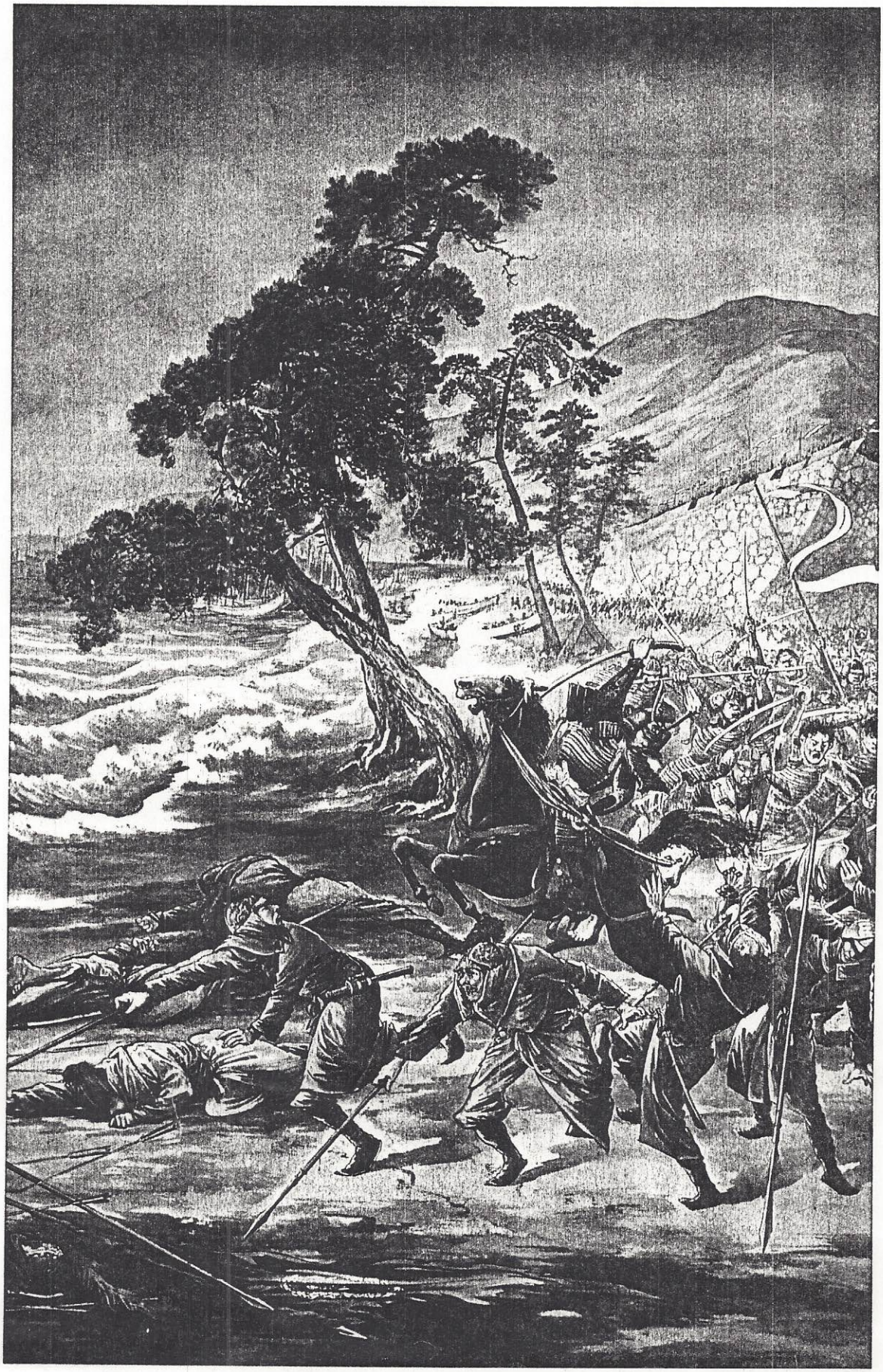
Japanese counterattack *routs the Mongol invaders before the defense wall at Hakata Bay in 1281. For the second invasion the Japanese were superbly prepared, with an army of 100,000 stationed on Kyushu and 25,000 troops in reserve on the neighboring island of Honshu. The latter were unnecessary; the kamikaze dealt the final blow, putting an end to Kublai Khan's dream of an overseas empire.*

n beaches.
ore waters
rtifacts, we
of what we
nd it would
rtifacts we
rve.
r relatively
ose of wood
en exposed
beneath the
ved for cen-
they can be

oration we
ashima for
nts with the
the device
n underwa-

e past sum-
d our divers
s much as a
1982 season
nds and has
knowledge
istory.

ore to learn.
actual re-
281, and no
vessels that
274. Three
shu and Ko-
Jima—fig-
invasions,
xplored.
extremely
onal work. I
roved to the
artifact as
and the ma-
he applica-
ss, not only
also in the
for Kublai
g. □



ense wall at
ly prepared,
serve on the
nikaze dealt
mpire.

vember 1982