

THE RIGHT STUFF BROUGHT US THE FIRST MEN WHO FLEW INTO OUTER SPACE. NOT MANY KNOW THAT AT THE SAME TIME, MAN WAS CONQUERING INNER SPACE UNDER THE OCEANS. BY CHRIS WRIGHT

SCI-TECH

INTO THE DEPTHS

The *Trieste* was relatively untested, untried and completely new technology. Yet two men got into it and went deeper than any human had ever been before. Or has been since.

PHOTO: DAVID BAISON / EXPLORETHEABYSS.COM LTD

IT IS JANUARY 23, 1960, AND TWO MEN STAND ON THE DECK OF A SMALL SUBMERSIBLE CALLED THE TRIESTE, PITCHING

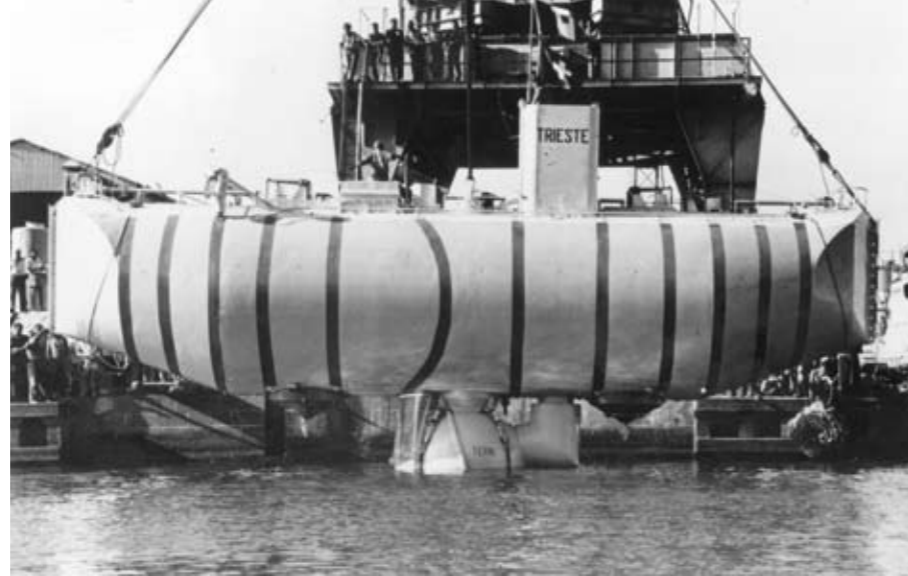
on 3-metre Pacific Ocean waves. The two, Don Walsh (28) and Jacques Piccard (37), have just made history - they have successfully descended almost 11 kilometres to the floor of the Mariana Trench - the deepest place in the world. And 50 years later, nobody has come close to repeating this incredible feat. It is a unique achievement in the exploration of our planet.

"We thought that in a year or so there'd be more people out here with better machines, to explore these deep [ocean] trenches," Walsh says. "We certainly hoped so." But it didn't happen. Since the death of Piccard in 2008, Walsh is now the only man alive to have gone so deep. He is the ultimate Inner Spaceman.

LOOKING WITHIN

The journey started in 1958 when, as a submarine lieutenant, Walsh volunteered to work on a special programme for the US Navy, jointly managed by the Piccard family. The programme was to explore the ocean deeps using the *Trieste*, an ungainly submersible contraption that used a spherical pressure-resistant cabin for its crew, suspended beneath a thin metal float filled with gasoline. The float, after upgrading before the dive, had a capacity of almost 129,000 litres and shot capacity of 16 tonnes. The sphere was 2 metres across with 12- to 17-centimetre-thick walls. It weighed 13 tonnes in air, eight in water. The sphere used on the dive was built by Krupp Works, Essen, West Germany, and was made to withstand 15,000 metres in depth. It was made of three rings glued with epoxy at the two joints.

Remembering his first impression of the *Trieste*, Walsh says: "It looked like an explosion in a boiler factory.



I thought to myself: I will never get in that thing."

The *Trieste's* premise was simple: vent the ballast tanks to sink; slow or stop the descent by releasing solid weights filled with small steel pellets; and then, because the gasoline in the float was lighter than the water around it, return to the surface.

The *Trieste* was built in the spirit of the time, the Space Race era when men with the right stuff conquered incredible odds using mainly ingenuity. When the *Trieste* came back from one test dive with failed joints, Walsh says the team fixed the problem "with a forklift truck and a large timber battering ram". This attitude saved the project from cancellation, he adds.

The obstacles weren't all technical, though. The US Navy had recently and rashly claimed it would be the first



To Walsh, the *Trieste* (top) looked like an explosion in a boiler factory. The world's only Inner Spacemen: Piccard at age 66 (centre) and Walsh with his Bathyscaphe Award (above).

PHOTOS: GETTY IMAGES; CORBIS; GETTY IMAGES; ROBBIE MCCLARAN



DON WALSH

After the *Trieste* programme Walsh commanded a submarine, the *Bashaw*; served in both the Korean and Vietnam wars; gained three graduate degrees in engineering, oceanography and political science; worked in the Pentagon as an advisor on submarines; founded the Institute for Marine and Coastal Studies at the University of Southern California; and started International Marine Inc, which continues today. As if that

isn't enough, he has dived in the Russian *Mir* submersibles on the *Titanic*, *Bismarck* and over the North Atlantic Ridge. He has also notched up 27 trips to Antarctica, 26 to the Arctic and five to the North Pole. Now, he thinks, it is time to stop. "Now that I'm 78, it's probably time to act my age," he says. "You don't want this geriatric old fart stumbling around, tripping over penguins."

to launch an Earth orbiting satellite. “They’d fire rockets out of Cape Canaveral and they’d splash into the bay, or they’d have to destruct them because they were heading for Kansas City. It was very embarrassing,” remembers Walsh. As a result he was given a strict order: no publicity until *after* the dive was successful.

DEEP FLOAT

The stage was set. On January 19, Walsh and his team headed off to the Mariana Trench dive site, 320 kilometres southwest of Guam, to find the deepest point by dropping dynamite into the ocean and timing the echoes. “We didn’t know exactly where the deepest place was: there were no maps or charts,” he says. “We didn’t care about exact depth measurement, only that 14 seconds was deeper than 12 seconds.”

Four days after, on January 23, the bathyscaphe arrived at the dive site. The weather was “pretty good”, says Walsh, “about six or seven on the Beaufort wind scale”. For the *Trieste*, that was a challenge, but they never considered aborting. “If we’d towed back in, our Navy masters in San Diego would have said: ‘that’s it’,” Walsh says. In fact, they did say that, but fortunately by the time the message reached them the *Trieste* had already dived.

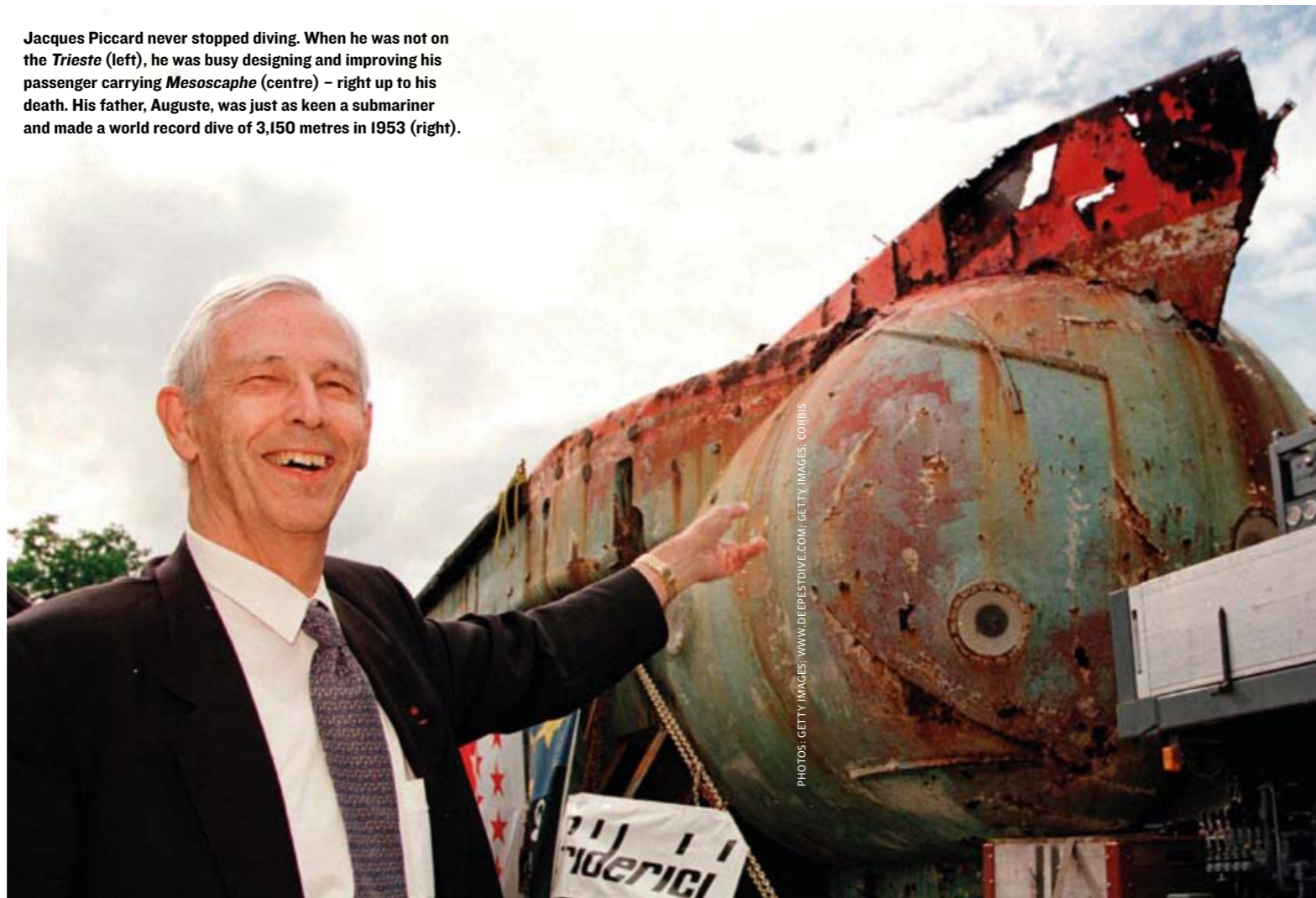
“The chief scientist put the message [from San Diego] in his pocket, walked

SINK CITY

The *Trieste* was fairly simple to operate. To sink, the operators had to vent the water ballast tanks. They could control their descent by releasing weights. When they wanted to return to the surface, all they had to do was jettison the steel ballast and the craft would ascend. The crew sphere, which would have to protect the crew from pressure 1,100 times greater than at the surface, was made of three steel rings, 12 to 17 centimetres thick and glued together with epoxy at the joints. Walsh recalls the admiral who ran the Navy’s Bureau of Ships coming to see the *Trieste* and asking how it was fastened together. Walsh reluctantly told him about the glue. “Lieutenant Walsh, the navy does not glue its ships together,” he replied.



Jacques Piccard never stopped diving. When he was not on the *Trieste* (left), he was busy designing and improving his passenger carrying *Mesoscaphe* (centre) – right up to his death. His father, Auguste, was just as keen a submariner and made a world record dive of 3,150 metres in 1953 (right).



around for a while,” Walsh says, “then sent a message back saying ‘*Trieste* passing 20,000 feet (6,000 metres).’”

The *Trieste* began descending at 8.30am and hit its first obstacle when it started bouncing along on the top of a thermocline (temperature difference between layers of water) at about 100 metres. Eventually Piccard and Walsh valved off enough gasoline to break through and began sinking again.

“It was close,” remembers Walsh. “Jacques was two metres [tall], and

we had all our kit - equipment, instruments, cameras and stuff. We kind of coiled up inside it.” It got cold, too. But, he says, it was no more crowded than sitting in what he calls “peasant class” on a trans-Pacific flight.

Most of the descent was uneventful, but at 9,500 metres, “we heard and felt a giant bang”. All the instruments looked fine - so, despite being deeper than any man had gone before, and having heard an explosion, they carried on. “We didn’t *think* it was OK to carry



Walsh (left) and Piccard inside the *Trieste*. Although they were stuck in close quarters with each other – and a pile of equipment – for several hours, Walsh says it was bearable

PHOTOS: US NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION; ROBBIE McCABAN

MORE MEN HAVE WALKED ON THE MOON THAN GONE AS DEEP AS WALSH AND PICCARD

on,” retorts Walsh. “We *knew* it was OK because our readings were normal.” Later, it became clear what the bang was: a crack across the window in the entrance hatch. Bad as that sounds, it wasn’t dangerous as flooding in the entrance tube was a routine occurrence during a dive, so the window was not a pressure boundary.

It took five hours to get down.

INNER SPACE

Finally their lights became visible, reflecting from the ocean floor. Piccard slowed the descent and they made an easy landing. The depth gauge read 37,800 feet (11,521 metres).

The two men shook hands, congratulated each other and called topside on the underwater telephone, a voice modulated sonar. They said they had reached the bottom, and it was good. The reply from the surface was a simple “OK”, no whoops or shouts of success. “They just acknowledged. You kept your messages pretty simple,” says Walsh.

There was a sense of anticlimax about the bottom of the Challenger Deep in the Mariana Trench, with a pressure of just over 1,000 atmospheres, which equates to just over 1 metric tonne per square centimetre (1,020 kilograms, to be precise) on the tiny sphere. They took no photos, since the landing had stirred up a cloud of sediment; and they only had 20 minutes on the bottom since they needed to surface in daylight.

“It was like being in a bowl of milk,” says Walsh. “We didn’t get any pictures.” The highlight, instead, was



Walsh has promised his wife he will stop travelling, exploring and adventuring. One day soon ...

Piccard sighting a foot-long flatfish, looking “like a sole or halibut” as he put it – a report which confounded scientists at the time. They believed no life could exist at such intense pressure.

The near-four-hour journey back to the surface was smooth, and it turned out later they had “only made it to 10,916 metres”. Once they reached the surface, a low-key celebration followed in the form of dinner and a well-deserved nap. They were still 320 kilometres from the nearest land.

A period of celebrity followed, and a meeting with US president Dwight Eisenhower. The success of the *Trieste*’s dive didn’t pay off however: not long after, the Navy decided it was not safe to

dive below 20,000 feet (6 kilometres) – so the *Trieste* became, and remains, an unbeaten record for man.

But Walsh says the motivation was not to stake a record. “I was never driven to go deeper and deeper,” he says. “The singular goal was to go to the deepest place in the ocean.” That is what the two men did. More men have walked on the moon than gone as deep as Walsh and Piccard.

Walsh bemoans the lack of investment in studying the ocean compared to space. “Perhaps when you go down instead of up, fewer people notice the significance,” he muses. “I’m writing an unauthorised autobiography: *The Right Stuff, The Wrong Direction*.” ■