POPULAR SCIENCE

THROWBACK DIY

HOW (NOT) TO BUILD YOUR OWN SCUBA GEAR

A 1953 tutorial for building your own underwater breathing apparatus wouldn't be very practical today, but it sure was optimistic.

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WHEN *POPULAR SCIENCE* associate editor Herb Pfister offered up instructions for do-it-yourself scuba gear in 1953, exploring the deep sea for fun was such a new idea that the acronym SCUBA—self-contained underwater breathing apparatus—was only a year old. The man who coined the term, Christian Lambertsen, was an Army doctor during WWII and developed one of the early untethered underwater breathing devices. It was known as a closed-circuit rebreather, and it scrubbed CO_2 from exhalations and recirculated oxygen for the US Navy's "frogmen" divers. Lambertsen's device was neither the first nor the last such apparatus. Japanese blacksmith Kinzo Ohgushi fashioned the first known underwater breathing machine in 1918, and marine explorer Jacques Cousteau and French engineer Émile Gagnan followed up Lambertsen's contraption with the Aqua-Lung, which employed a regulator that delivered compressed air only when the wearer inhaled and vented CO_2 into the surroundings.

By the mid-'50s, the experience of exploring the deep in this way was still quite uncommon, but ingenious DIYers wanted in on the action. Pfister described underwater diving as "a brand-new sensation, a feeling of really being out of this world." In 23 photographed steps, he explained how to repurpose then-ordinary items like surplus CO_2 tanks, high-pressure connectors from oxygen-therapy-equipment dealers, and aluminum sheets to build an aqualung—all for about $40 (about $438 in 2022 money).

Today, deep-sea diving is not the fledgling sport it was back then—though it is still a rather high-end hobby—and we recognize that the risks of building your own underwater breathing apparatus likely outweigh any novelty. Scuba gear is readily available for would-be explorers. Plus, some homemade projects, especially those requiring precision-fabricated parts like oxygen regulators, can cost more when you aren't buying in bulk as manufacturers do. For instance, an economical scuba kit on Amazon will set you back $499, while the individual components can add up to thousands of dollars—especially if you want quality gear from top brands like Aqualung or Cressi.

Still, if you're motivated to shoulder the potential costs and build your own dive gear from as close to scratch as possible, the parts are out there—although what was cheap and readily available in 1953, like brass pipes, may be expensive now. Besides, we must also consider advances in apparel, like the invention of buoyancy compensators—diving vests with air pockets that allow users to control their rise and descent. Such equipment makes things much easier on your spine than Pfister's plywood plate and harness.

The biggest concern, however, is safety. Underwater diving regulations have changed quite a bit since the middle of the 20th century. After two people died in California in 1952, Scripps Institution of Oceanography, which led the way in scuba's nonmilitary adoption in the US, developed a set of rules and regulations for the activity; these include air-quality standards and specifications for breathing masks and helmets. The first edition was released in 1954. Even so, it would be difficult to make any DIY gear conform to the requirements.

In the '50s, though, Pfister was a bit optimistic as he doled out advice for diving newbies ready to take their garage aqualungs out for a plunge. "Using a diving lung," he wrote, "is as safe as crossing a street." He cautioned, however, that even crossing a street has its rules. "You, for the first time, are about to cross into a new medium—deep water."