

IT WAS A SIMPLE IMPROVEMENT, BUT ONE THAT eventually changed the steamship industry. In 1881, brothers and Scottish engineers George and James Weir, who 10 years earlier had founded their own company, G. & J. Weir Ltd., patented a high-pressure pump that pushed water into a ship's engine boiler to cool it down. The device marked a step-level increase in the efficiency of steamships and had a global impact: Glasgow, Scotland, where the firm was based, built more ships at that time than any other location in the world.

Today, Weir Group still carries the founders' name, as well as their engineering ethos and familial culture. Over the years however, the company has reinvented itself multiple times, building some of the first commercial desalination plants, developing prototypes for the first helicopter engines and becoming a publicly traded company in 1946.

Weir is focused on three divisions: Minerals; ESCO, the global leader in ground-engaging tools for mining; and Oil & Gas. The business is global, with operations spanning more than 70 countries and a workforce of approximately 15,000. Jon Stanton, the company's CEO, has been at the helm since October 2016 and has driven an agenda that empowers employees, focuses on customers, invests heavily in technology and emphasizes performance. His vision is anchored in the company's history.

"We have lots of examples of Weir coming up



Engineers of REINVENTION

with innovations that revolutionized a particular industry," Mr. Stanton says. "We have to continue doing that. We can't stand still."

In an interview, Mr. Stanton talks about what has helped Weir keep a successful focus for almost 150 years and his plans for maintaining it in the face of modern challenges.

Weir has a long legacy of engineering solutions. Yet, the business has also grown through acquisition, and M&A can sometimes dilute founding values. How has Weir managed to maintain its sense of identity?

There are multiple levels to it. First of all, we have a strong familial culture. We think about our people as a global family. Over the years, Weir has reinvented itself, innovated and changed. But part of the culture incorporates that change, innovation and evo-

Weir CEO **JON STANTON** tells Brunswick's **CAROLE CABLE** and **MATHEUS FIERRO** the secrets of keeping a fast-growing, 150-year-old corporation focused on core values.

lution. As we've grown, more often than not, we acquired family-owned businesses that have similar characteristics. So they actually fit in. That was the case recently with ESCO; it was the case with SPM [a fracking equipment provider acquired in 2007]; with Warman [a pump maker acquired in 1999]. The culture is similar to ours, and they've blended in very well.

Does being a public company put pressure on that familial approach?

No, I don't think so. We are who we are. The Weir culture is one of our distinguishing features: It's strong and it's consistent around the world. Our people speak a common language and there's a real connection with the company.

That connection came through strongly in our recent global engagement survey: People feel they

don't have to compromise, and that the Weir culture aligns with their personal value set and ethics. That's a very powerful part of who we are. In many ways, it's what drives the success of the company.

More laterally, as investors think more and more about the ESG agenda, they're starting to understand in a much better way the importance of people and culture, what the company stands for, and how that drives value creation—alongside the harder edges of performance and management.

We play with that at our peril. It's such an important part of who we are and our success.

With the upcoming launch in May of your all-employee share plan, Weir ShareBuilder, every member of staff will gain a stake in the business. Does that culture of ownership feel like going back to the future?

We've got to nurture and continue to develop our culture. We've done a number of things along the way to drive that, around engagement, a listening strategy, crowd-sourcing innovation. Moving on to share ownership is a natural progression.

I want people who come to work for Weir to do so because they feel that it's a place they can do the best work of their lives. I'd like them to be inspired, to go out there and take a risk, do things they might not at other organizations. Giving them a stake in the future of the company underpins that. It has been a very complex thing to do. If you can imagine all of the different legislative requirements there are around the world—that's put quite a strain on the legal team to put that in place. But, you know, we took the view that if we are going to do it, then we are going to try our damndest to do it for absolutely every single employee.

I've also had several shareholders say to me: "We understand the cost of the plan. But you're doing absolutely the right thing for the long-term health of the business." And recent town halls I've done with employees where I've talked about it, the first question has been, "Thank you for the free shares. How can we buy more?"

How do you think about attracting and retaining the next generation of employees when graduates don't necessarily want to work for extractive industries?

The culture—what we stand for, the entrepreneurial nature of our business, the decentralized nature of it—is a very powerful proposition. Everyone has the space to make a difference at Weir, individually and in teams.

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But also, we're at the start of a journey. Disruptive technologies will be brought to bear in our markets, whether mining or oil and gas. Our customers are facing great sustainability challenges and, rather than be part of a historic legacy, we're pushing Weir to be part of the answer. Our customers are going to have to use less energy, less water, reduce emissions and think deeply about their impact on the societies and communities they operate in. That's going to require innovative engineering and Weir is part of the solution.

We're engineers. We solve problems. A lot of what we have done historically has been around mechanical, hydraulic and material science-type technologies. Now, we have to go through digitization to improve performance, extend product life and drive predictive maintenance. For that, we have to embrace big data, artificial intelligence, the internet of things. That's a one-way street.

It's a massive opportunity. But it's also a threat to our business that we have to manage well. If we don't, we're at the risk of being disintermediated by others who will try to get in between ourselves and the customers, which will ultimately dilute value. That means we need to attract people with capabilities that we don't necessarily have today, such as software engineers, data scientists and electronic engineers.

I've actually been delighted with the way we've attracted some of this new talent into the organization. People at our competitors look at Weir and say, "That's a place I'd like to work in the future." When I speak to Geetha [Dabir], our Chief Technology Officer, she tells me that we're competing against Apple and Amazon for this talent and people are coming to Weir because what we're doing is cool. We're solving modern problems, taking this mechanical engineering business to be something that's different in the future.

On technology, how are you helping miners address those challenges?

Historically, what we've done is incrementally improve our products so that they become more efficient, increasing wear life and so on. That's important because we have a global customer base, so even a small improvement can result in significant savings. But we're also now trying to balance that incremental development with the transformational or disruptive ideas. We're balancing our technology spend between those two areas—incremental developments, bigger-picture challenges.

In Minerals, for example, we've been working hard on high-pressure grinding rollers, or HPGRs. It's a technology that can replace traditional grinding mills in many applications. Compared to legacy processes like SAG [semi-autogenous grinding] mills, HPGRs can reduce energy consumption by something like 25 percent. That's a huge step change, especially if you think that around 4 percent of the world's electricity is used to crush and grind rocks.

In Oil & Gas, North American shale is at an important moment. We're re-imagining what the frack site of the future will look like, with fewer pumps, a lower footprint, different drive systems. With electrification, for example, drillers will be able to significantly reduce their emissions to execute the same job without having to truck in thousands of liters of diesel.

The waste material known as tailings and the environmental threat it poses have long been a concern around the mining industry. Is that something you're addressing?

We've been working on it for a few years. We have a technology center in Melbourne focused on dewatering and how to create solid rather than fluid tailings. It's our Terraflow® solution. Dry tailings systems are much safer. Our equipment gets it down to 90 percent solid paste, and then pumps that so it

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can be stacked onto hills, or used in underground mines to fill tunnels. We also have ways to help customers repurpose tailings, turning it into concrete and shotcrete, and using it to build roads and line or fill tunnels.

The third piece we're working on is recycling tailings, either reclaiming materials that have not been mined or detoxifying them. For example, we're working with a customer in Latin America where tailings dams go back 100 years, ever since the mine began operating. There's more valuable mineral in the tailings than there is coming out of the mine today because ore grades have dropped so much. We're helping that customer turn the tailings back into a slurry and pump it back into the mill circuit so it can be reprocessed to extract that metal.

Has that close relationship with customers played a major role in Weir's resilience?

It absolutely has. Our investment and our technology get us a seat at the table. What really distinguishes Weir is our focus on customers and our people's ability to put themselves in the customer's shoes to help them make processes more efficient, improve their profitability. That's all part of the culture of the company. We like to be number one at what we do.

What do you think are the opportunities for Weir in the next 150 years?

Who knows where we'll be in 150 years? [Laughter.] By then we could be looking at opportunities in outer space, for instance, maybe asteroid mining. We're not banded in the way we think about the future.

On a more immediate note, if you could advise young engineers starting out on their career today, what would you tell them?

One of my big learnings, and I say this to my children, is that when you're thinking about what you want to do in your career, focus on something you're passionate about and you'll enjoy doing. After all, this is something you'll likely be doing for the majority of your working life.

When you end up in that space, work hard, because if you can get a team together with an outstanding work ethic and that is going to go the extra mile, special things can happen. ♦

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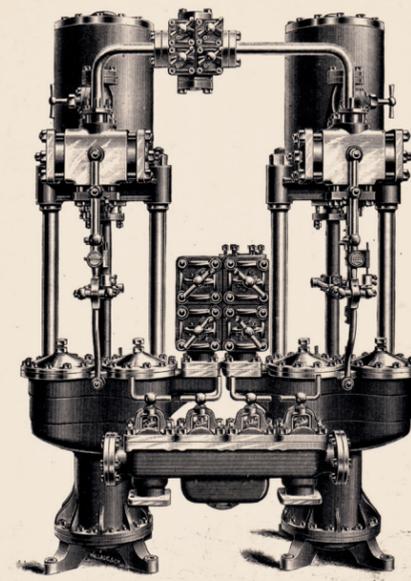


Fig. IV.
WEIRS' DIRECT-ACTING FEED PUMPS.
ARRANGEMENT "A."

ENGRAVING: COURTESY OF WEIR

The Weir brothers launched their company in 1871 amid a flurry of early patents. At left is an example of the feed pumps that helped the company become successful by improving efficiency for steamships. Glasgow, where the firm was based, was an international port and an important center for steamship builders, allowing their design to quickly spread and become a new standard.