The technical genius of two Irishmen was largely responsible, towards the end of the last century, for developments which, in our century, have transformed maritime history. John Philip Holland, with whom this study is concerned, and Charles Algernon Parsons typify the divided Irish nation. United, and with, as Tone demanded, the old derogatorily applied appellations of Catholic, Protestant and Dissenter replaced by the common name of Irishman, those two great inventors could have at last met the challenge so long shunned, that of our island situation. This would have helped us, for our own benefit, and that of all mankind, to play a worthy part in the conquest of the seas which cover 70.8% of the globe we inhabit.

Because in the last century Ireland was wholly subject to foreign control, Holland and Parsons had both to take their ideas out of the country before they could be developed and fully applied. Both met with derision, incomprehension and obstruction from bureaucracy and the official military mind, and each triumphed in the end by the persistence that is the essential accompaniment of genius. Each of the two was able to confound his opponents by actions directed with panache and humour characteristically Irish. But here the resemblance between two outstanding careers ends.

Parsons, the perfection of the marine steam turbine, who routed the sceptics by racing his Turbinia unauthorized through the British fleet at Queen Victoria’s Diamond Jubilee review, outstripping the fastest warship sent to head him off, and made possible that great line of famous ships from the Lusitania and the Dreadnought through the Bismarck and Normandie to the United States and the France of our own day, was rich. He was, indeed, perhaps the last inventor of importance who was able to combine in his own person the theoretician, the investigator, the practical tester and the financial entrepreneur, before the teams of modern days, incorporating researchers and practical operatives, backed by governments or vast business monopolies, took over.

Holland’s work was always in danger of frustration from lack of finance, and, in the end, like so many great inventors, he saw the bulk of the profit that began eventually to accrue from it pocketed by the smart business-men.

Holland’s father was in the British coastguard service. He shared this background with the Young Ireland patriot, Thomas Darcy Magee, whose job it was to have been, had the ’48 rising developed, to go to Clydeside and seize specific shipping for the revolutionaries. Holland’s childhood at a coastguard station clearly left him also with a fund of knowledge likely to be valuable to him when grown up.

The inventor was born in February 1841, probably on the 24th, in the third of a row of single-storied cottages overlooking Liscannor Bay, Co. Clare, reached by a lane.

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1 See R. P. Morris, John Philip Holland, United States Naval Institute, Annapolis 1966, pp. 13 and 184.
called Castle Street leading off the Liscannon-Lisdoonvarna road. His mother, formerly Mary Scanlon, a Liscannon girl, was the second wife of his father, John Holland, the first wife, Anne Foley, probably from Kilkee where Holland Senior was stationed before transfer to Liscannon, having died in 1835. Irish was the language of the home.

John Philip Holland's childhood fell in the decade of the Great Famine, the period known as the Hungry Forties in Ireland as in many other European lands also. One of his brothers and two uncles died from the cholera epidemic that came in the wake of famine, and another brother caught smallpox. Hard though life must have been, it in no way resembled the destitution that struck so many thousands of our fellow countrymen, as the Hollands had at least the certainty of a regular income and a roof over their heads.

The boy first attended the newly-built Saint Macreehy's National School, Liscannon, and then learned English. Then, perhaps for a year, he was at Ennistomy (recte Ennistimon?) Christian Brothers' secondary school, five miles away towards Lahinch.

In 1853, about when his father died and the family moved to Limerick, the future inventor entered the Monastery School in Sexton Street in that city. He had thought of going to sea, but poor eyesight prevented him. He did well at school and enjoyed learning. Seeing in membership of the Order of Christian Brothers a way to continue his own education while earning a living, he took the initial vows of the Order on the 15th of June, 1858.

This was the year of the foundation of the Irish Republican Brotherhood. The Famine had achieved what the 250 preceding years of oppression had never accomplished: it had cut off the maritime-minded sections of our population from their own people. Henceforth they built ships or sailed them for foreign owners, with little idea or prospect of ever seeing an Irish merchant marine or an Irish naval service. Yet only a few months before the Great Hunger, Thomas Davis, in a significant passage of one of his Nation essays,² had written confidently of the need to found national navigation schools and train a whole generation of Irish seafarers to expertise in navigation and seamanship for a free nation whose coasts would be adequately lit³ and whose ports would be properly equipped.⁴

But Davis's successors as leaders of the movement for Irish national redemption had no such broad vision of an Ireland whose destiny lay on the sea. James Stephens in 1862, in Ireland in the Future, written under the pseudonym "A Silent Politician," sketched more clearly than any other Fenian leader what sort of an Ireland his movement was seeking to create. Yet Stephens had nothing to say of an Irish merchant navy or Irish schools of navigation, though endowing his hypothetical republic with a powerful battle fleet. It took John Philip Holland to inspire a few of the next generation of Fenian leaders with some practical maritime plans, and even these were eventually abandoned. The result was that when the national re-awakening occurred in the early years of this century its efforts were hampered by the absence of an Irish Volunteer Marine to second the efforts of the Republican Army, and when a semblance of independence was at length won, no effort was then made, and too little has been made

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² See Davis's essay "Foreign Travel."
³ The Irish Lights Commission did not come into existence till 1887 and Davis, well-informed as usual, was aware of a series of disasters in the 1840s attributable to absence of proper coastlining.
⁴ The main harbours were still run, in Davis's day, under laws, revolutionary for their time but even then outdated, that had been passed by Grattan's Parliament.
since, to revive for the country’s good Ireland’s once lively maritime traditions.

Holland went to Cork, tried his hand at teaching science at the North Monastery School; delighted his pupils, but had to give up for a time through ill health. After a period passed in sketching and thinking, he was appointed to Maryboro’ (Portlaoise), then to Enniscorthy, and in 1865 to Drogheda. Fenianism had grown strong, and two of Holland’s brothers were involved. Two years after the abortive rising of 1867, Holland was transferred to Dundalk. He here proved himself a gifted music-teacher, but by now his thoughts had turned to the submarine. He is said to have experimented in a bath with a clockwork model he had designed. When his health failed again he received, on the 26th of May 1873, a dispensation, not having taken the final vows of his Order, and soon after set off, a steersman passenger, for the U.S.A., reaching Boston that November. Twenty-seven years later, by then famous, he recalled in an interview in the Washington Star that, though he had never taken part in politics, he did not want his inventive genius, in which he had supreme faith, to serve ‘John Bull.’ Parsons, thirteen years Holland’s junior, was just transferring from Trinity to Cambridge.

In 1875, Holland was persuaded to offer his plan of a submarine boat to the U.S. navy but the Secretary of the Navy rejected it as “a fantastic scheme of a civilian landsman.”

Meanwhile his brother, Michael, had joined O’Donovan Rossa’s Fenian circle, and in 1876 he introduced him to Jerome Collins, founder of Clan-na-Gael, who was later to die on a voyage of Arctic discovery monumentally mismanaged by the U.S. navy. Holland’s link with the Fenians was strengthened when he met John Breslin at a reception for the Fenian prisoners who had been rescued by the whaler Catalpa from Freemantle Gaol, Western Australia, largely through Breslin’s efforts.

Breslin and John Devoy realized that the basis of Britain’s imperial power was her navy, and that a blow at her navy would be a direct blow for Irish freedom. (In passing it may be said that the failure to see this earlier had been a fundamental weakness of the movement, which had thus proved itself less perspicacious than the United Irishmen. At a time—1797—when the proportion of Irishmen in the British navy—probably 12½%—was lower than in the 1860s, when it was nearly 16%. United Irishmen had played a significant part in some of the greatest mutinies that every paralysed the fleets of Britain).

Breslin and Devoy now raised, through the movement, funds to enable Holland to build an experimental submarine, with the object of ultimately developing this weapon to the point where it could be used in action against the warships of the enemy.

It must be remembered that from 1876 on for two hectic years Britain, where a swashbuckling Conservative government under Disraeli had replaced Gladstone’s first ministry, was on the verge of war with Russia. Moved by a rising of kindred Slavs against the Turkish occupants of their country, Russia went to war in 1877 against the Turkish Empire, the survival of which Disraeli was determined to ensure. Now the Russian naval forces in the Black Sea, reduced to minimal strength since Russia’s defeat by France and Britain in the Crimean War, were proving that “poussière navale” (small craft hard to see) could, if dynamically commanded, tie up and also seriously weaken an orthodox battle fleet. Moreover, the weapon they were using was a primitive torpedo. In December 1877 the General Military Board of

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*See John Devoy in The Irish Nation, 23/2/1884.*
Clan-na-Gael, New York, wrote to the I.R.B. Supreme Council in Ireland:

The art of torpedo warfare is now in such an advanced condition that if properly employed the national forces ought to be able to paralyse in a great measure the movements of the Navy. We ought to be able to command some of the entrances to harbours, bays of the sea, as well as disembouchures of rivers.6

What was needed, of course, but not yet in existence, was a completely invisible vessel to fire the torpedoes. Twenty-three years later, thanks to the efforts of Holland and other inventors, such a formidable weapon was available. Fourteen years after that, in the very first weeks of the first World War, it began decisively to prove that the beliefs of Devoy, Breslin and Holland in the efficacy of the submarine, and the beliefs of the General Military Board in that of the torpedo, had not been misplaced.

Meanwhile, Fenian naval projects were developed for putting surface raiders on the seas to harry Britain’s merchant shipping if the war with Russia came, and for seizing Gibraltar and handing it back to Spain. Soon after, the ingenious J. J. O’Kelly, later a Parnellite M.P., the author of the Gibraltar plan, began his own very successful experiments in designing torpedoes.

In 1873, Holland had built what H. C. Fyfe in his authoritative Submarine Warfare (Grant Richards, 1902) called "an under-water canoe," 16' x 1' 8" x 2', propelled by a screw actuated by a pedal. Holland’s No. 2 was 10' x 3' 5" x 3', with a double shell, driven by a 4 h.p. petrol engine, but No. 3, the famous Fenian Ram, begun in 1879 at the Delamater Iron Co.’s yard, New York, was altogether more formidable, 31' x 6' x 6' displacing 19 tons driven by a 15 h.p. petrol engine and armed with an underwater cannon fired by compressed air. U.S. Admiral Hichborn wrote:

She was the first submarine since Bushnell’s7 time employing water-ballast and always retaining buoyancy, in which provision was made to secure a fixed centre of gravity and a fixed absolute weight. Moreover, she was the first buoyant submarine to be steered down and up inclines in the vertical plane by horizontal rudder action, as she was pushed forward by her motor, instead of being pushed up and down by vertically-acting mechanism. Her petroleum engine... was inefficient, and the boat therefore failed as a practical craft; but in her were demonstrated all the chief principles of successful brain-directed submarine navigation.8

Holland’s vision of a submarine was of a vessel that would operate entirely underwater. Such a craft has only become possible with the invention of the nuclear-powered engine, and today the U.S.A., U.S.S.R., France and Britain possess submarines of scarifying power, built at scarifying cost, capable of spending weeks underwater and circumnavigating the globe without surfacing. From the purely technical point of view they fulfil the ideal after which the great Clare inventor was continually striving. But he was a humane man, and what he would have thought of these monsters one does not know. As early as 1890 he clearly saw, with regret, the diabolical possibilities of the submarine,9 and it is significant that in his later years he spent a good deal of thought on the peaceful potentialities of underwater craft.10

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7 A pioneer submariner of the U.S. War of Independence who died in 1826.
8 Quoted in Fyfe, Submarine Warfare, London 1902, pp. 246–7. The French Gymnote, projected by the great naval architect Dupuy de Lôme, and designed by Gustave Zédé five years after the completion of the Fenian Ram, was the first really successful motor-powered submarine. She had a 55 h.p. electric motor, displaced 30 tons, and was 59' x 3' 9" x 6'.
9 Morris, op. cit., p. 103.
10 Ibid., pp. 131-2; Fyfe, op. cit., p. 155.
Germany’s Deutschland did indeed make commercial runs to U.S.A. in 1916 to break the Allied blockade, but they were not of course economic. The Japanese have published plans for sub-arctic voyages by commercial submarines which, being more direct and being made by vessels with only the resistance of water to overcome and not that of air as well, should be economical once the right type of craft has been designed. And, of course, the bathyscaphe, a development of the submarine, has, particularly under the command of French pioneers like Commandant Houot and Irish-descended Lieutenant O’Byrne, proved to be of incalculable value for oceanographic research, on which the survival of mankind, on a planet whose population is ever increasing, must finally depend. So that if Holland’s inventiveness has played a part in making the world the alarmingly dangerous place it now is, it has also pointed the way to a solution of some of the biggest problems looming before it.

Holland, before constructing the Fenian Ram, or even his No. 1, had profoundly studied the history of submarine navigation up to his own time. This had taken him back past the plans for submarines of Fulton (1801-4) and Bushnell (1773), to the 16th century Englishman Bourne, the 17th century Dutchman van Drebbe, and the great French 17th century scientists Fathers Mercenne (friend of Descartes) and Fournier, whose experiments and researches eased the way for later pioneers. He must have known of the proposals widely publicized in 1853 by the Englishman Nasmith for construction of an anticipation of the Italian pocket submarines of the 1939-45 war, designed to fix an explosive to the hull of an enemy battleship; of the 54 successful dives made by the Spaniard Narciso Monturiol in his fish-shaped Ictilo; and above all of the achievements between 1832 and 1861, in France and in the U.S.A., of Villeroi of Nantes with his remarkable “bateaux- poissons.”

11 Villeroi’s work overlapped in time that of Bauer, whose Diable Marin was, in 1855, the first Russian achievement in the unfolding of the submarine story, and was followed by the prolonged trials, arousing great hope and much discussion, of Bourgeois’ Piongueur, built at Rochefort in 1863. The Revd. G. W. Garrett, a Trinity College, Dublin, graduate, born in 1852, was trying out, just before the Fenian Ram was laid down, his manually-operated Resurgam with its compressed-air tanks and stores of chemicals to purify its air after use, which so interested Thorsten Nordenfelt, the Swedish gun-inventor, that he began to invest part of his fortune in submarine construction. And naturally Holland had studied the destruction of U.S.S. Housatonic by hand-crank-driven Confederate semi-submarine David on the 17th of February, 1864.

The Fenian Ram, Holland’s very important contribution to the chain of submarine development from the earliest tentative efforts to the decisive 1880s, cost the Fenian Skirmishing Fund (to the chagrin of Rossa, who wanted quick results) $60,000 in all. Her existence led to dissension in the movement. Holland said the extremists wanted “ten cents’ worth of revolution every week.” There were charges of pilfering, and the trustees of the Skirmishing Fund were brought to court. To prevent attachment of their property, Breslin clandestinely removed the Ram to New Haven, Connecticut. When Holland could not get her back, he broke with the Fenians and said she could “rot” in their hands. She was, in fact, in spite of many rumours of imminent action, never put to use—until resurrected in 1916 and put on show to raise funds for the victims of the repression after the Easter Rising in Dublin.

With the help of Edward Zalinski, U.S.N., Holland built his No. 4. This was the only time he departed from his conviction, eventually triumphantly vindicated, that the screw of the submarine should be situated abaft the rudder.

No. 4 was completed in 1885 but was destroyed by accident during launching. This severe disappointment did not deter Holland. In January 1887 he married Margaret Foley, daughter of an Irish emigrant. In 1888 and again in 1889 the U.S. government, spurred into interest at last by the success of the French Gymnote, held open competitions for a submarine design. Each time Holland won, but no contract was ever forthcoming. Meanwhile the Spanish Peral of 1887, the Italian Delfino of 1892, and the French Gustave Zédé of 1893, were further steps towards the evolution of a militarily operable submarine.

In 1893 the U.S. government opened another competition: again Holland won. This time he was given a contract, but know-all government engineers altered the design of his No, 5—Plunger—during construction, although Holland had formed his own John Holland Torpedo Boat Company to carry through the contract. Holland walked out in disgust, and, as he foretold, Plunger was a total failure.

Holland then decided to build a submarine himself, and, having demonstrated its capabilities, to offer to sell it to the U.S. government. Holland’s No. 6 was launched in 1897, underwent first trials in 1898, and improvements in 1899 after the U.S. Navy, despite the advice of its secretary Theodore Roosevelt, had refused to try her. Again in November, 1899, notwithstanding the modifications introduced, No. 6 was rejected by the navy; but a well-organized campaign of publicity and lobbying helped to bring about a change of mind and, on the 12th of April, 1900, the U.S. government resolved to purchase the vessel. No doubt news of the successful trials of Laubeuf’s Narval hastened the decision. Launched in October 1899 and submerged for her first dive on the 3rd of February, 1900, this craft was more effective than anything of its kind hitherto conceived or created, the culmination of years of thought on the part of France’s Admiral Aube, Minister Lockroy, and the “jeune école” which believed the French navy should confine its rôle to national defence by means of “poussière navale” rather than overseas expansion through battle fleets. (France’s entanglement with Britain and Russia in the Entente alliance was the main factor in causing this policy to be abandoned, so that when war did come, Germany, where the possibilities of the submarine as a commerce raider had attracted attention, became the leading state in the practical application of submarine warfare).

Narval’s achievements, the publicity given to Holland’s No. 6 (a less sensational but still very sound boat), and perhaps above all the older Gustave Zédé’s hit with a dummy torpedo on the big battleship Jauréguiberry in July 1901 during manoeuvres off Corsica, caused conservative admiralties everywhere to rush to equip their fleets with submarines in the early years of this century. Ironically, Holland sold plans to the British Admiralty in 1901, and their Holland A.I. was launched in October of that year at Barrow-in-Furness, where Britain still builds submarines, now nuclear-powered.

John Philip Holland’s name was made. But while he had hitherto been operating through a small company backed largely by friends and acquaintances, submarine construction now became Big Business. Holland was outmanoeuvred by the smart financiers and lawyers, and in 1907 retired from business and public life. Several proposals he had made to the U.S. government on further progress in submarine design—proposals vindicated by later history—were turned down, and Holland made frequent bitter comments about obstinacy and blindness in high places.

Holland had been active all his life, and his biographer, Richard Morris, whose
grandfather was one of the inventor's technical associates, rightly recalls that in 1900 he could have boasted that he had spent many more hours under water than any other person. He was courageous and resourceful, and many perilous incidents that occurred during trials of his various prototypes arouse astonishment that so frail and short-sighted a man could have endured so much. Two of his submarines he even equipped with an elementary periscope, an instrument developed by the French Darrieus, Garnier and Ramazzotti, Holland's North American rival Simon Lake, and above all Howard Grubb of Dublin, from the earliest known form devised by Telar van Elven of Amsterdam in 1859. "Steering a straight course under water," he wrote in a summing-up of the Fenian Ram's trials, was "a problem that must be solved before submarine warfare could be made practicable." 12

Holland's ingenuity was matched by his versatility. He was a musician and an artist; he was seriously interested in flying and in astronomy; he directed a dramatic society and ran Sunday school classes in St. Joseph's parish, Newark, where he spent his last days. Late in life his interest in Irish problems revived, and he became a member of the American-Irish Historical Society and welcomed the Irish language revival movement. He loved his home and lived unostentatiously, having attained comfort indeed, but never luxury. His only child, a daughter, Julia, died at the age of 19, to his great distress, in November 1913, and he followed her on March the 8th, 1914, survived by his Fenian younger brother, Michael.

In the first World War, that began so soon after the great Clare inventor's death, German submarines alone sank 5,554 ships, of a tonnage of 12,192,000, and 178 U-boats were destroyed. In the 1939-45 war U-boats disposed of 2,700 ships of 14,500,000 tons, and 781 U-boats were sunk. If these lugubrious figures were the only monument to Holland's life-work, that life-work would have to be dismissed by the historian as equally futile with his well-known prophecy, expressed to the first president of the U.S. Red Cross, who foresaw the evil potential of the submarine, that his invention would serve as a deterrent to international conflict. No weapon has yet performed that function, and it would be a rash forecast that even the nuclear-powered and nuclear-armed underwater battleship of today could deter war without the goodwill of men, which is decisive.

But nobody, least of all an Irishman, can dismiss Holland's life as the mere prelude to unparalleled holocausts at sea. We think of him as an inventive genius who at a decisive stage in his career was willing to permit his inventiveness to be directed towards grandiose if ultimately unfulfilled schemes for the liberation of his oppressed fatherland; and as a visionary who in his old age hoped that his discoveries would one day be utilized for the peaceful purposes of passenger and commercial transport and scientific research.

NOTE: In addition to the works cited in the text and footnotes, the following were consulted:


12Morris, op. cit., p. 52.