

HOW THE STORMY WAVES WERE CONQUERED.

BY C. F. GORDON-CUMMING. IN TWO CHAPTERS.—CHAPTER I.



AMONG the general notices of subjects proposed for consideration in the House of Lords on July 28th, 1882, was one calling attention to the effect said to be produced by pouring oil upon the sea in tempestuous weather, and to ascertain what measures the Board of Trade had adopted to test the value of recent experiments, and to encourage a discovery valuable to life and property at sea.

The question thus raised by Lord Carnarvon was followed up by Lord Aberdeen, Lord

Cottesloe, Lord Sudeley, and Lord Northbrook, and a number of remarkable details, referring to a subject so old, and yet so little known, were discussed.

The chief interest of this conversation lay in the fact that this was probably the very first occasion on which "the rulers of the people" have formally recognised the existence of this most unobtrusive, but most valuable, ally of all those whose life-work involves many a hard struggle with stormy waves and tempests.

The strange thing is that its power should have been so widely known in remote ages, and in many far ends of the earth, and yet that no effort should have been made to apply it systematically, or to recognise it as a necessary item in the sea-going equipment of boats and vessels.

In its metaphorical sense we have all our lives been familiar with the wisdom of "throwing oil on the troubled waters"—an expression whose origin no one has yet been able to trace, though I have heard many persons confidently assert that it is a quotation from the Hebrew Scriptures! I am told that Plato refers to the subject, and we know that Pliny does so, for he tells us how "the divers of the Mediterranean carry water in their mouths and do spurt it abroad, because all seas are made calm and still with oil."

Just about a hundred years ago Dr. Franklin received a letter from a gentleman telling him how he had taken passage by a Dutch ship, and how a storm had arisen, and waves were beginning to break over the vessel, when the captain proceeded to take a small quantity of olive-oil, and poured it overboard (a little at a time, and not using more than four quarts altogether). So efficacious was the working of this simple charm that the waves were allayed, and the writer commended the matter to the scientific consideration of the wise doctor.

Having had his attention thus turned to the subject, Dr. Franklin did not fail soon to remark the strange glassy calm that invariably accompanied the presence of whaling ships in New Port Harbour (Massachusetts), and on examination he found that this was due to leakage of whale-oil and blubber. Thereupon he commenced a series of simple experiments, beginning by pouring a tea-spoonful of oil on a rough pond, when it immediately formed an oily film, covering a space of fully half an acre, smooth as glass. It appears that one drop of oil will instantly diffuse itself over a surface four feet in circumference, producing a perfect calm, without wrinkle or break.

Dr. Franklin next experimented on the surf off the coast of New Hampshire. The sea on every side was white with crested waves, but when he poured a moderate supply of oil on to these tossing waters, he immediately found himself floating on a smooth surface. The actual undulation of the great swelling waves was in nowise affected, but they were unable to form breakers, so that they were shorn of their danger.

One might naturally suppose that when this subject had been so far proven by so learned a man, it would have led to some practical result, but nothing further seems to have been done, and only occasional notes have reached us from whale ships off the coasts of Newfoundland and Labrador, or from vessels engaged in the palm-oil trade on the shores of Africa or the South Sea Isles, recording the strange calm which seems always to surround them, owing to the leakage of oil pumped up with the bilge-water, whereas the ships lying near them, carrying dry cargo, are tossing and pitching on a white-crested sea.

The value of oil in smoothing the surface of ruffled water is well known throughout the world. The fishers and divers in various parts of the Mediterranean continue its use at the present time, just as they did in the days of Pliny. The men of Gibraltar scatter oil that they may more plainly discern the largest oysters; those of Corsica and Syria carry it to smooth the water should they be overtaken in storms when far from land. The boatmen of the Persian Gulf habitually carry bladders filled with oil, and in rough weather tow them astern of their frail craft, having first pricked them so as to cause a moderate leakage as they run through the waves. The fishermen of Lisbon smooth the surf on the bar of the Tagus by emptying a bottle of oil at the moment when they are about to enter the breakers.

The fishers of Bermuda pour oil on the sea (just as poachers in Scotland do on the dark Highland rivers) to smooth the ripple, that they may strike their fish with greater accuracy. So do the men of Samoa, and other Pacific Isles where spearing is a favourite mode of fishing.

Well, too, do our own fishermen know the oily film that marks the spot beneath which sport the shoals

of fish that form their harvest. While they are yet a great way off, the smooth surface betrays their presence. On the coast of Cornwall the approach of the pilchards is thus revealed, and on our Northern shores the herrings are likewise betrayed.

Fishermen take note of how the sea falls to a gentle roll when they are hauling up their well-filled herring nets, though it had previously appeared ready to engulf them. At Fraserburgh, where there is a constant influx of boats laden with herring, the large amount of bilge-water from the boats calms down the sea to a gentle roll, and allows of the boats entering the harbour with the greatest safety, though the waves are breaking over the pier.

We need not go far for instances of the rough-and-ready application of fish-oil in its crude form. Mr. Anderson, writing from Edinburgh, tells how, some years ago, a number of fishermen in his employment were caught in a storm thirty miles east of the Isle of May, in the Firth of Forth. As their only hope of salvation, they had to cut open the skate, ling, and cod, mince up the livers and cast them all round the boats. Almost instantaneously they found themselves floating in gentle rolling waves, though on every side of them the crested billows continued to break furiously. The oil was not quickly dissipated, but floated in a compact body, and in this smooth water the boats so lately in dire peril lay for ten hours, till the tempest subsided, and they were enabled to return to port.

Thus we see that a well-laden fishing-boat carries her best protection in her cargo. As, however, she may chance to fall in with foul weather and empty nets, it is obviously more secure for every boat invariably to carry two or three gallons of coarse oil ready for use in any emergency. The dark oil extracted from the livers of various fish is probably the cheapest, costing from 1s. 9d. to 2s. per gallon. Indeed, this can be made by the fishers themselves from the refuse thrown aside in cleaning their fish.

A boat thus provided can smooth a path for herself across the stormiest bar at the most dangerous harbour-mouth. As one clear fact out-weighs many vague statements, I will quote the case of the Stonehaven boats, which were caught in a very severe gale on the 13th of April, 1882. The first to return experienced the utmost difficulty in crossing the bar, and as the storm increased, and the waves waxed more and more tumultuous, the gravest fears were entertained for the boat *Pioneer*, which was still missing. Happily, her skipper, Alexander Christie, bethought him of the experiments so recently tried at Peterhead, and though he had no oil on board save a little colza and a little paraffin for the boat's lamps, he determined to try whether so small a quantity could be of any use. There was so little of it that it really seemed childish to suppose that so infinitesimal a remedy could avail. Nevertheless, he stationed a man on either bow, and just as they approached the awful wall of raging surf,

they slowly poured out the contents of their oil-flasks. The result was magical. The white waters were driven back, and the boat glided into harbour over great billows of glassy green.

It has been stated that oil is not always efficacious in quelling the short, jagged waves, which form what is called a "chopping sea." This, however, does not appear to be proven. There is also some diversity in the evidence as to the power possessed by oil in overspreading the surface of the water in the teeth of the wind. The whalers appear to have decided that the surest solution of the question is to keep their whales to windward, so as to insure calm water while they are being cut up and shorn of their blubber. Ordinary cargo is generally discharged, or shipped, to leeward.

Of course if oil cannot spread to windward, its efficacy must be considerably diminished. Some very simple mechanical appliance might, however, be devised, with a force-pump and jet, whereby the oil might be mixed with sand and thrown from the boat or vessel, so as to sprinkle the water at a distance of a few feet ahead, thus gaining a considerable advantage.

Instances, almost without number, can be brought forward of vessels which have undoubtedly been saved from destruction by means of this most simple and blessed safeguard, but in every case it is recorded as though some strange thing had happened to them, instead of being the natural result of a certain cause.

A very striking example was recorded in the year 1846, when the schooner *Arno*, commanded by Captain Higgins, was caught in a heavy gale off Sable Island. She had been engaged in the fisheries off the Quero Bank when the storm commenced. For some hours she rode at her anchor through a tremendous gale, but as the danger of foundering seemed imminent, the captain deemed it wiser to run her on shore than to face the almost certainty of foundering in deep water during the night. Lashing himself to the helm, he bade his men fill two large casks with fish-oil and blubber, and lash the casks near the fore-shrouds, and lash the two best men to the casks. He then bade all go below, while these two, armed with long wooden ladles, scooped up the blubber and oil, and threw it as high as they could in the air, that the wind might carry it before them.

The wind carried the oil far to leeward, scattered it over the water and made a broad shining strip of smooth water—billowy indeed, but quite glassy—and over this, the schooner flew, never shipping a sea. On either side the white crests were pitching and breaking, but the little vessel glided securely over her charmed pathway, and not a barrel of water fell on her deck till she ran right on to the sandy beach, and the crew with their clothing and provisions were safely landed ere the vessel went to pieces. She was so old and rotten that she would probably have broken up long before, had not her constantly renewed cargo of blubber kept her always floating in comparatively smooth waters.



A few minutes later Marion called softly from her room, "Mrs. Ingram!"—a summons immediately responded to; and soon after she came down, and with a flush of triumph on her beautiful face, asked Lessie to congratulate her.

"Austin's parents are relenting, and I'm to go and stay with them—on trial for a month, like a sewing machine."

Lessie looked up quietly. "What will Dr. Watson say?"

"Dr. Watson!" exclaimed Marion, breaking out into her most charming laugh. "Why, you dear, foolish little thing! he has known of my engagement all along."

"I don't believe you."

Marion shrugged her shoulders. "Ask him yourself, then."

At this point Mrs. Ingram entered the room, and the subject of Dr. Watson was dropped. Lessie remained convinced that he would be broken-hearted, and she resolved proudly not to pity him in the least, or take any notice of him. Nothing would induce her to console a man for the loss of another woman.

Nevertheless, before a fortnight was over her resolution was hopelessly broken, and eight or nine months

later a double wedding took place from Mulgrave Lodge.

Mrs. Austin Longworth was a very much more important member of society than Mrs. Mark Watson; but Lessie made far the sweeter, truer wife. Marion lived in the constant whirl of activity for which she was so eminently well fitted by nature, while Mark and Lessie rarely left the quiet village where they first met.

"What were you saying to Marion in the backwater that day?" asked Lessie one evening, as she and her husband wandered by the river-side.

"Did you see us, Signora? I was telling her that, fortunately for me, I knew, through a friend in Dresden, of her engagement."

"She didn't tell you about it herself, then?"

"Oh, no," said Mark, with a peculiar smile, "it wouldn't do to let the second string know there is a first."

"And you are quite, quite sure you never did care for her at all?"

"Listen, Lessie," said Mark, standing still and speaking earnestly, "you see this broad, swift stream—do you think it could ever flow backwards? No more could the current of my love, once set towards you, ever recede—ever alter its course for a moment."

H. L.

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ANOTHER striking illustration of the use of oil as a safeguard in tempest was furnished by the evidence of Captain Betts, of the *King Cenric*, running coal from Liverpool to Bombay. He encountered a furious gale, which raged continuously for nearly five days. Tremendous seas poured over the quarter and stern of the vessel, which was in imminent risk, when hap-

pily the chief officer, Mr. Bowyer, bethought him of an expedient which he had seen successfully resorted to on various occasions in Atlantic storms.

He proposed to the captain that the plan should be tried, and his suggestion was followed. Mr. Bowyer got out two canvas clothes-bags, and into each poured two gallons of pine-oil. He punctured the bags slightly, and flung one over each quarter, towing them along. The effect was magical. The waves no longer broke against the poop and sides of the ship, but at a distance of many yards.

Around the poop, in the wake of the vessel, was a

large circuit of calm water, where the oil had overspread the surface. The crew were thus able to repair damages, the ship being relieved from those tremendous shocks received from the mass of waters which had previously poured over the vessel, and the danger was considerably lessened. The two bags lasted two days, after which, the worst fury of the gale having expended itself, it was unnecessary to renew the supply. Four gallons of oil, scarcely worth 30s. perhaps, saved the *King Cenric*, its cargo, and the lives and property of its crew.

In the New York shipping list for 1867 the evidence of an experienced skipper is given, to the effect that on two occasions he had saved his ship by the timely use of oil. As the result of his own experience, he recommended that every large vessel should be fitted with a couple of iron tanks, one on each side, each to contain forty gallons of oil, which might readily be drawn off into small casks, as required. He also strongly advocated that every boat should be furnished with a five-gallon oil-tank, to be kept always full, in case of need. It is sad that a suggestion made so many years ago by a competent authority should still be received with so much distrust, as though it were but a vain dream—in truth, many persons even now receive all such testimony with something of the polite incredulity usually bestowed on stories of the great sea-serpent.

The principle has been practically applied, with the happiest results, in the case of the screw steamer *Diamond*, of Dundee, which was wrecked off the island of Anholt. Her mate recollected having heard of a whaler which had encountered heavy gales in the South Seas, and whose crew had altogether abandoned hope, when happily some oil-casks were accidentally crushed. To their amazement, not another wave broke over her, and she escaped the fate which had appeared so imminent.

He resolved to try the experiment in his own case, and though neither he nor his comrades really believed that their frail boats could possibly live in such a wild raging sea, still, as no life-boat seemed likely to come to the rescue, it was their only hope. So each boat was provided with a five-gallon can of oil, and from the moment she was lowered, one man was told off to pour it very slowly over the stern. The effect was instantaneous, and each boat passed safely through the awful breakers, and actually reached the shore without taking in so much as a bucketful.

Is it not strange that, in the face of evidence such as this, no systematic application of this principle should hitherto have been adopted?

Isolated instances are, however, numerous, and are reported from time to time. Thus Captain Champion records having encountered so severe a hurricane off the coast of New Zealand, that he would assuredly have lost his schooner but for the use of oil. He prepared five small canvas bags, each to contain about three pints of fish-oil. He fastened to these, cords about twenty-five yards in length, and threw them overboard. Immediately an oily film overspread the surface of the water, and lasted for about forty-eight hours, during which his vessel rode in smooth water, not a wave breaking near her.

A very similar account was given me by the Danish captain of a small vessel in which I crossed the Yellow Sea. He told me he had frequently carried a long wicker basket containing oil-bags suspended from the stern of his ship, and by their gentle dripping he was saved from all dangers of breakers astern.

Some men carry oil-bladders merely pricked with a needle, and suspended from the sides of the ship, so as to drip slowly. They consider that several small bladders answer better than only one of larger size.

Captain Atkinson, of the ship *British Peer*, states that he carries leather bags punctured with small holes, and in stormy weather he fills them with oil, and hangs them astern of the vessel. He says it is marvellous to see the angry billows subside, and ride under the oily track which lies in her wake. He attributes the safety of his vessel in several perilous gales to the use of this simple precaution.

The captain of the *Gem*, New Brunswick, states that in April, 1879, he also saved his vessel by the use of a pricked bag of oil.

Captain Thomas F. Adams, of the ship *Ralston*, belonging to Messrs. Richardson and Co., of Greenock, in a letter intimating the arrival of that ship at Mauritius, from the Clyde, reports having experienced very severe weather on Saturday, 3rd December, 1881.

On the Monday and Tuesday following, while proceeding down the North Channel, a terrific gale with a terrible sea was encountered, the ship being unable to carry any canvas, and being nearly driven ashore.

While lying to, a fearful sea was shipped over the poop, which did considerable damage on board. The cargo broke adrift, and Mr. Rennie, the second officer, was very badly injured. The waves were running so high, that Captain Adams says he was "compelled to resort to keeping bags of oil over the side, also swabs dipped in oil, to try and break the heavy seas. This," he says, "had a wonderful effect, and I had to continue it for twenty hours. You can judge by this," he continues, "of the terrible weather, remembering that the ship was very light, at least eighteen inches from her load-line."

Here we have the case of an experienced mariner, who, in the hour of danger, hangs out his oil-bags as a matter of course, as being a safeguard of whose efficacy he was already well assured.

Various other nautical men have sent us similar testimony, to the effect that they are well aware of the value of this simple remedy, and occasionally resort to it, but only when in actual danger, as they do not care to waste a few shillings' worth of oil unless it becomes positively necessary. Surely the old saying of "penny wise, pound foolish" was never more strikingly illustrated!

Amongst the most remarkable evidence recorded within the last few months is that of the captain of a steamer which ran into a wild gale in the Bay of Biscay. Heavy breakers were pouring over her, and she was in imminent risk of foundering, when it occurred to the captain to get a couple of canvas bags, into each of which he poured a quart of common lamp-oil, and having punctured them freely, he dropped one over each bow, suspended by a strong rope of sufficient length to tow freely. From that moment his vessel floated in unbroken water, for each wave ceased to curl as it reached the influence of the soothing oil, and rolled by in glassy undulations. The bags continued to ooze for eight hours, by which time the storm had abated, and so two quarts of oil were literally all that was expended to bring about this result. During the same tempest several steamers foundered, and there was no reason to doubt that the safety of the vessel in question was solely due to the magic of the oil-bags.

Very noteworthy, too, is the case of a small sailing-boat, the *Leone di Caprera*, in which two rash Italians last year crossed the Atlantic from Buenos Ayres to the Mediterranean. They had had the forethought to lay in as much oil as their tiny craft would carry, and this they used freely each time that the waves were dangerously high, with the happy result of reaching their destination in safety.

The most systematic application of the oil question which has yet been attempted, is that made by Mr. Shields of Perth, at Peterhead in Aberdeenshire, a spot selected as being the most exposed to every gale that sweeps the eastern shores of Scotland, and one, moreover, where a dangerous bar makes the entrance

to the harbour a matter of exceeding difficulty and risk in stormy weather. Mr. Shields determined to try a series of experiments to prove in what manner oil might most certainly be made available to enable ships and boats to enter the harbour at all seasons.

One of the preliminary tests was of the simplest nature. Captain David Gray, having heard that one drop of oil would smooth four feet of water, determined to try its effect on the heavy surf which breaks over the harbour bar. Selecting a rough wintry day, he lowered an uncorked bottle full of oil into the raging waters. In a few moments the oil floated upward from the bottle, and overspread a large area of the surface, which became smooth and glassy, not reduced in height, but transformed from angry surf into long undulating rollers, over which any boat or ship might glide in safety.

Mr. Shields' tests have been made on a very large scale. He carried 1,200 feet of lead and iron piping from the shore to some distance beyond the mouth of the harbour, where they terminated in deep water. In a shed on the beach stands a 100-gallon cask of oil; a force-pump carries the oil through the pipe, and ejects it through three conical valves at the further end. Thence it rises to the surface, and straightway forms a thin film, which overspreads the tempestuous waters above the bar, and subdues the white crests which are the source of so much danger. Huge billows still swell, but they are transformed into smooth rollers.

Of course, the chief objection to this plan is the very large amount of oil which must be expended every time that a ship or boat approaches in stormy weather, and which would certainly result in making the harbour authorities chary of its use, except in cases of extreme danger. It would appear simpler, and more certain, to devise means for applying the remedy to each several ship at the moment of need. It has been suggested that oil-canisters might be attached to rockets, or shells containing oil might be fired from

mortars, so as to discharge their contents on the water close to the ship in distress, or at the moment she is about to cross the bar.

Still more practical does it appear that every vessel should, as a matter of course, carry her own oil supply with which to make a smooth pathway for herself in the hour of danger. It might be so applied that *the man at the wheel could reach a handle, by which to open a valve or elbow in an oil-tank in the stern of the ship*. In the event of a person falling overboard, the drip of oil thus produced would instantly form a smooth track, and *enable a boat to go straight back to the rescue of the drowning man*. So, too, the life-boat, fitted with a self-acting oil-tank, would find her approach to a ship in distress vastly facilitated were the breaking of the crested waves hindered for even a little while.

Another most desirable application of oil would be *to attach two copper pipes containing oil round every life-buoy—one on the inner, the other on the outer edge—closed by a cork attached to the string by which the buoy is hung up*. A printed notice should be appended, *bidding the person who throws it overboard, jerk the string, and so pull out the cork*. Everyone who has been much at sea must have been struck with the small chance that a drowning man has of even *seeing* the buoy flung to him, as he and it rise and fall amid the mountainous waves. But *this simple addition would at once create a large space of glassy water, visible for perhaps a mile, in which, moreover, he could float securely, till the vessel, probably running before the wind, was able to lower her boat and send him succour*. At present, we all know *how rarely such seekers are able even to find their life-buoy*.

But all these points are matters of detail that will assuredly be wisely worked out by competent persons, if they can once be truly convinced of how great a power for good lies ready to their hand, hitherto neglected only because it has seemed too simple to be true.

OUR GARDEN IN FEBRUARY.



THE dark winter months, to which we gardeners are always so willing to bid farewell, are once again rapidly being left behind, and we find ourselves mayhap, on this still doubtful morning of an early spring, taking a general and eager survey around, full of hope and full of plans for the coming summer. And our little greenhouse operations are still engrossing us, and will very likely occupy much of our time before we settle down to any regular and prolonged outside work, more especially too in our suburban gardens, where the space at our command limits our ambition very provokingly.

In the greenhouse then we are, of course, during this month occupied by the annual re-potting; those plants more particularly which we have been watch-

ing through the winter in their dwarf state and in small pots, and which we want to acquire their full, or at all events a very considerable perfection in the approaching summer. In an ungenial spring, or where winter is disposed to hang on, as we say, the re-potting operation should be postponed. In a fairly mild season we should recommend beginning the re-potting with the most vigorous and healthy flowers, and then continue our work with the more delicate ones when the season is two or three weeks more advanced. The early part of February, however, when the weather is still disposed to be severe, may well be occupied by the preparation of such things as material for drainage of your flower-pots, or the thorough washing and arranging of the pots themselves, and more particularly when pots have been previously used, the