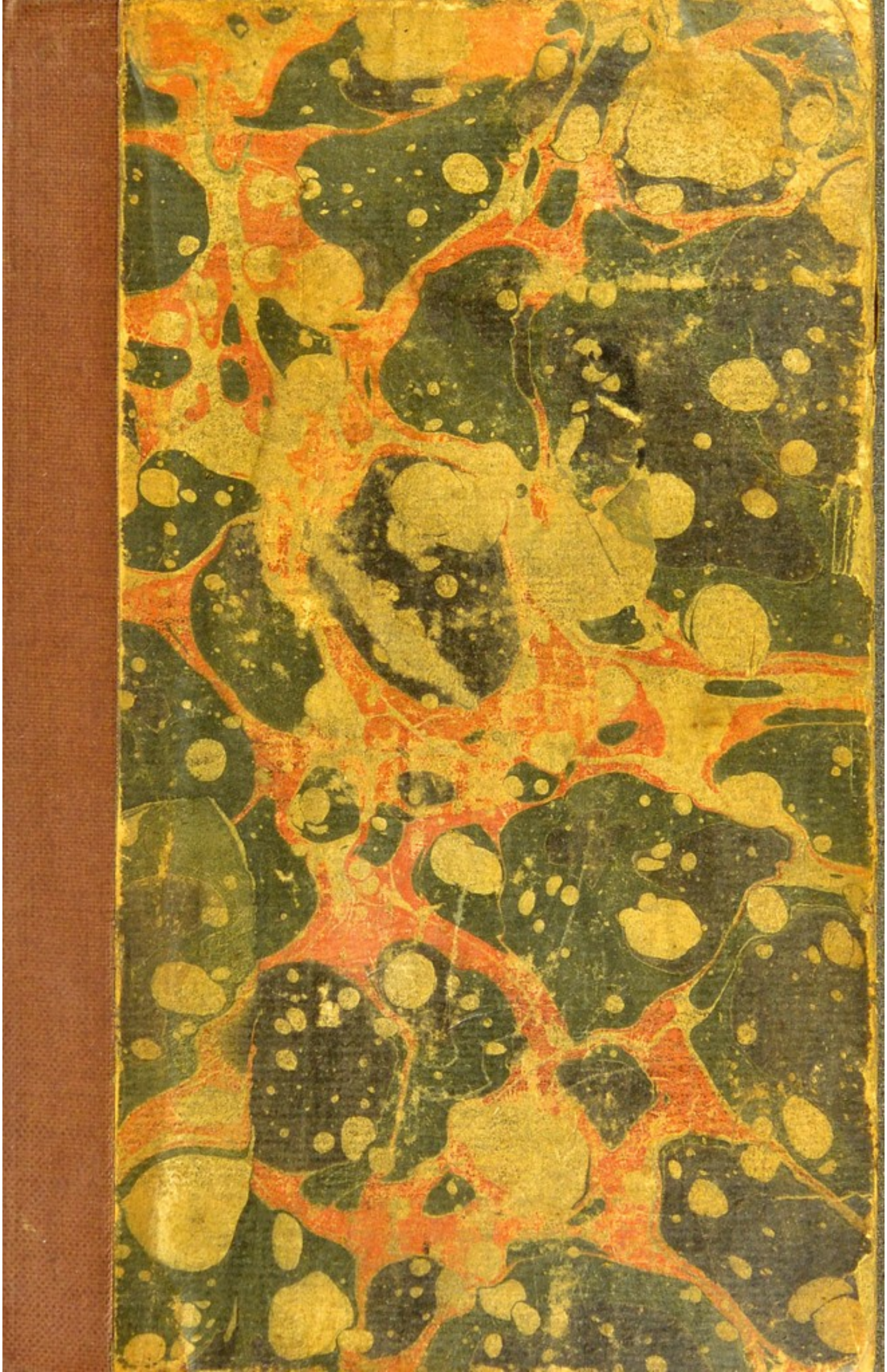
An essay on the preservation of shipwrecked mariners, in answer to the prize-questions proposed by the Royal Humane Society : "1. What are the best means of preserving mariners from shipwreck?-2. Of keeping the vessel afloat?-3. Of giving assistance to the crew, when boats dare not venture out to their aid?" / by A. Fothergill, M.D. F.R.S. member of the Royal College of Physicians, Lond. honorary member of Medical and Phil. Societies of Lond. Edinb. Paris, Manchest. Philadel. &c.;



Reid on Sea Bathing

Weeks &c Have False

Therwen on Diseases

of the Bladder

ON THE

PRESERVATION

OF

SHIPWRECKED MARINERS.

Printed by J. NICHOLS,
Red-Lion-Passage, Fleet-Street.

AN

ESSAY

ON THE

PRESERVATION

OF

SHIPWRECKED MARINERS,

IN ANSWER TO THE PRIZE-QUESTIONS

PROPOSED BY

THE ROYAL HUMANE SOCIETY:

"1. What are the beſt Means of preſerving Mariners from Shipwreck?—2. Of keeping the Veſſel afloat?—3. Of giving Aſſiſtance to the Crew, when Boats dare not venture out to their Aid?"

By *A. FOTHERGILL*, M.D. F.R.S.

Member of the Royal College of Phyſicians, Lond.
Honorary Member of Medical and Phil. Societies of Lond.
Edinb. Paris, Manchest. Philadel. &c.

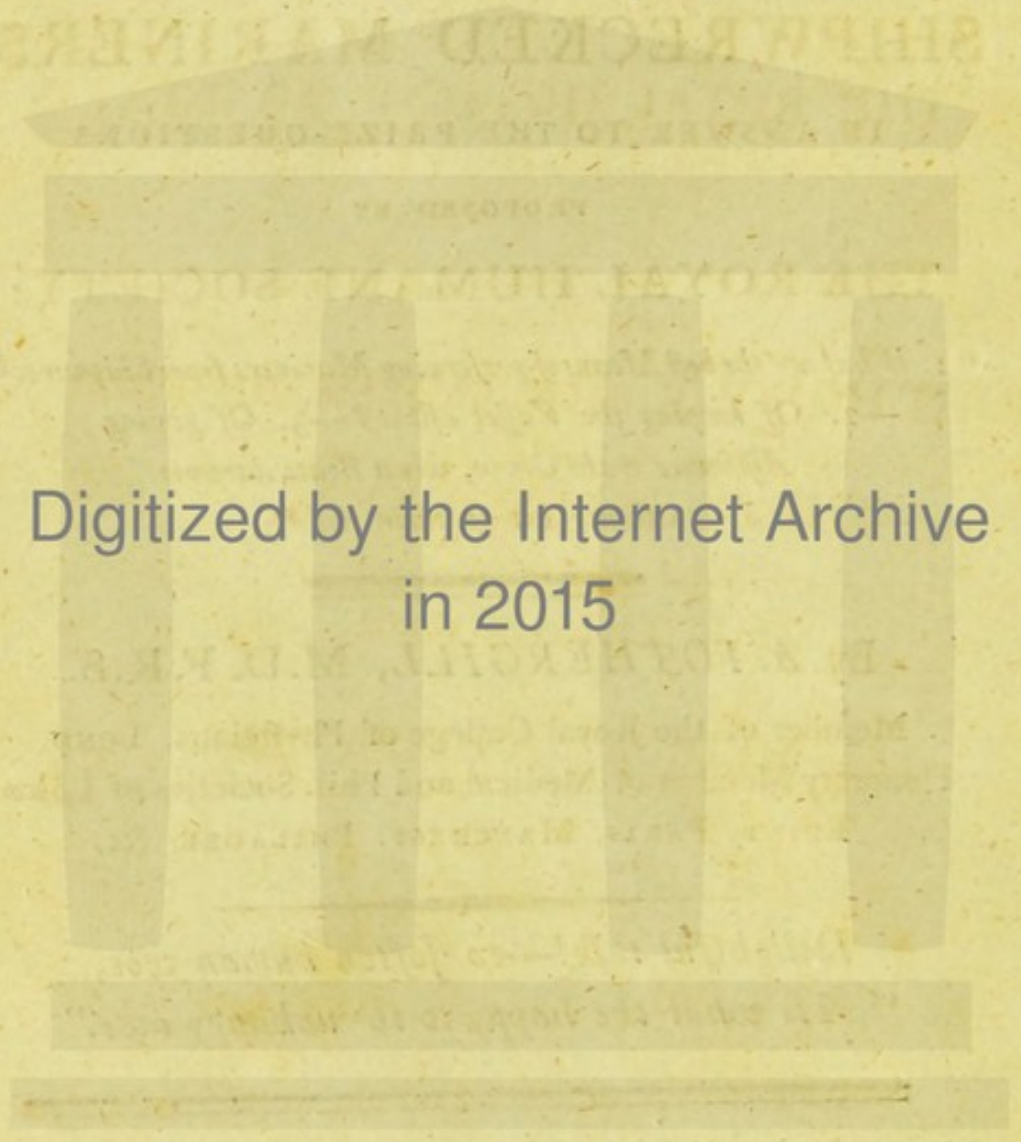
Delightful taſk!—to ſoften human woe,
"'Tis what the happy to th' unhappy owe."

LONDON:

Printed for the Society by John Nichols,
And ſold by Johnson, Dilly, Hookham;
And at the Libraries in Bath, Bristol, &c.

1799.

(Price Two Shillings and Sixpence.)



TO THE

KING'S MOST EXCELLENT MAJESTY,

PATRON

OF THE ROYAL HUMANE SOCIETY:

TO THE

RIGHT HONOURABLE THE PRESIDENT,

THE VICE PRESIDENTS,

THE TREASURER,

AND MEDICAL ASSISTANTS,

THIS ESSAY,

IS MOST RESPECTFULLY INSCRIBED,

BY THEIR VERY OBEDIENT,

AND FAITHFUL SERVANT,

THE AUTHOR.

LONDON, MARCH 19, 1799.

At a ſpecial Meeting of the Directors of

THE ROYAL HUMANE SOCIETY;

Several of the Elder Brethren of the Trinity-Houſe being preſent; the PRIZE ESSAYS, on preſerving Mariners from Shipwreck, were read; when the following RESOLUTIONS paſſed unanimouſly:

I. *That the ingenious Eſſay which has for its motto, "Delightful taſk, to ſoften human woe," &c. is a very able and ſcientific performance, happily enliſting Philoſophy in the cauſe of Humanity.*

II. *That, as the precautions which it ſo earneſtly impreſſes may tend to prevent the fatal diſaſters of ſhipwreck, and to preſerve the lives of Britiſh ſeamen, its publication, eſpecially at this eventful period, will be peculiarly intereſting; and that, therefore, the permiſſion of the Author be requeſted.*

III. *That, on opening the ſealed packet, annexed to the above mentioned Eſſay, the Author appears to be Dr.* FOTHERGILL *of Bath.*

JOHN NICHOLS, *Chairman.*

TO

THE COURT OF DIRECTORS.

GENTLEMEN,

SINCE you were pleaſed to crown my former Diſſertation with your HONORARY GOLD MEDAL, I muſt now, (agreeably to what I long ago hinted,) beg leave to decline any ſhare in your preſent pecuniary premium. In obedience, however, to your ſecond reſolution, reſpecting the publication of this Eſſay, I ſubmit to your ſuperior judgement. Since it has been honoured with your ſanction, I have re-touched it throughout, in hopes of rendering it more worthy of your approbation. In compliance, therefore, with your obliging requeſt, it now ventures, though not without diffidence, to meet the public eye.

As the naval force of Great Britain is computed to conſiſt of not leſs than eight hundred ſhips of war; while her commercial fleets, and trading veſſels of various denominations, ſurpaſs thoſe of all other nations, diſaſters at ſea, particularly at this juncture, are moſt ſeriouſly to be deprecated. So great, indeed, is the aggregate value of her

ſhips, with their reſpective cargoes and merchandiſe, that it can hardly be eſtimated. Great as it is, however, it can bear no competition with the lives of Britiſh ſeamen on board; yet between them and a watery grave is hourly interpoſed, only a thin partition of brittle planks!

The preſent ſubject, therefore, involving the lives of thouſands of our fellow-ſubjects, and property to an amount almoſt incalculable, is perhaps one of the moſt momentous that can, at this time, engage our attention. When, under the ſignature of a Life Director, I firſt ſubmitted this queſtion to your conſideration, as perfectly congenial to your life-ſaving inſtitution, it was chiefly with a view to call forth the abilities of ingenious writers and experienced navigators. If the preſent Eſſay ſhould ultimately contribute to ſo important a purpoſe, by opening a new path of inquiry, I ſhall think the labour well beſtowed.

"*Vice fungar cotis.*"

No philoſophical work written expreſſly on ſhipwreck having yet reached my notice, the ſubject to me, appears to be novel, and in a manner untouched *. The following ſketch, undertaken

* In contriving various means of forming a line of communication with the ſhore, that ſome of the methods propoſed by me may have occurred to others, is not improbable, as has been hinted reſpecting Mr. Bell's experiment. Had the

taken amidſt a variety of avocations, though much ſhort of what I could wiſh, is yet the beſt I could produce in ſo ſhort a time, and with ſo few materials.

Doubtleſs the Author may be accuſed of raſhneſs, in thus venturing out of his native element, and in quitting, at once, *terra firma*, to encounter the dangers of the deep, and to brave the ſtill more ſtormy ſea—of criticiſm!

Preſuming, however, on your wonted candor, that you, my Lords of the Admiralty (in other words, my SUPREME JUDGES), will not be extreme to mark what may ſeem amiſs, I here chearfully ſubmit to your inſpection, my log-book, charts, and ſuch implements as appear neceſſary to render ſea-voyages leſs perilous, and, in caſe of ſhipwreck, to ſave the lives and property of unfortunate mariners in the hour of diſtreſs.

the anonymous writer in a late Morning Chronicle, who claims it as the diſcovery of another anonymous writer, and publiſhed eight years ago in an Anonymous French Journal, brought forth any thing MORE NEW OR MORE PRACTICABLE than what originally appeared in this Eſſay, when read before the Society in March laſt, it would aſſuredly have afforded me much pleaſure to have announced it.

But who the original inventor is, if not Mr. Bell, or in which of the numerous French Journals the ſuppoſed diſcovery is recorded, "this *deponent ſaieth not.*" Therefore,

——— "*Si quid noviſti rectiùs iſtis,*
Candidus imperti, ſi non his utere mecum."

GENERAL

GENERAL CONTENTS.

PRELIMINARY OBSERVATIONS

ON THE

FREQUENCY OF SHIPWRECKS,

PARTICULARLY NEAR SHORE.

ILLUSTRATED BY SOME LATE MELANCHOLY EVENTS.

OF all the heavy afflictions incident to a ſea-faring-life, ſhipwreck is the moſt diſaſtrous. For what can afford a more affecting ſpectacle than thoſe poor way-worn mariners, who, on their joyful return from a long voyage to the boſom of their families, are unhappily caſt away at the very mouth of the harbour! To behold them, in this perilous ſituation, conflicting with the mercileſs waves; clinging to the broken planks, or with uplifted hands and piercing ſhrieks imploring aid with all the eloquence of ineffable

woe! among the crowd of ſpectators on the beach, ſee the aged parent, the tender wife, and the helpleſs children of the diſtreſſed ſufferers, bathed in tears, and, in the anguiſh of their ſouls, pouring forth their unavailing cries and ſupplications! at length exhauſted with ineffectual ſtrugglings, the devoted victims in the agony of deſpair, are forced to yield to the all-conquering element, and, while caſting their laſt look on the ſhore, are ſuddenly overwhelmed in one common undiſtinguiſhed grave!

Now, this is no feigned picture of imaginary diſtreſs, but the genuine recital of a mournful event, which, alas! is too often realiſed on the Britiſh coaſts!

An affecting inſtance of this nature happened not long ago, in open day, and in the face of at leaſt a hundred ſpectators, to two veſſels belonging to Cardigan Bay, which, during a ſtorm, were unfortunately wrecked near the coaſt. One of them, being in a *decayed* ſtate, ſunk within fifty yards of ſhore, where the crew, being inſtantly caſt on a ſand bank, miraculouſly eſcaped. But the miſerable ſufferers in the other veſſel, eleven in number, being unable to keep their hold, whilſt immenſe billows broke over them, were waſhed off one by one, until only one man was left, who tenaciouſly kept his ſeat for two hours after his unfortunate companions, when a

prodigious

prodigious wave daſhed the wreck to the ſhore, where it unhappily ſtruck againſt a rock which forced him back into the foaming ſurge, and he was ſeen no more!

Second Caſe of Shipwreck near Shore.

ACCORDING to an extract of a letter from Baſſeterre, of Aug. 3, 1792, the ſhip Britannia, captain Woodyear, with thirty perſons, including two women and a child on board, ſtruck on the bar near ſhore, and ſoon broke to pieces, leaving the captain with the female paſſengers and four men on the wreck; all the reſt being waſhed off, except a few who eſcaped by ſwimming.

A boat repeatedly attempted to get off to their aſſiſtance, but in vain. The captain having exerted every nerve to ſave the remaining ſufferers, particularly the women and child, was at length ſo completely exhauſted as to be utterly unable to prevent their falling a prey to the devouring waves. He, together with his remaining companions, ſoon underwent the ſame unhappy fate!

The gallant captain might have ſwam on ſhore with his brother, but obſerved, that his quitting

the ſhip would diſpirit his people, and that he could not think of leaving them, particularly the poor women and child, in ſo perilous a ſituation. Thus did he nobly ſacrifice his own life in a fruitleſs effort to preſerve theirs!

The lamentations of the people on ſhore moſt forcibly expreſſed their ſentiments on this truly diſtreſſing event. To increaſe the horrors of the ſcene, the brothers and relations of the unfotrunate captain were among the ſpectators; while Mrs. Moore, one of the paſſengers, was alſo ſeen with her child in her lap, and clinging to her other ſon and her brother, wringing her hands in the wild agony of deſpair, while her diſconſolate friends on land were unable to afford them the ſmalleſt aſſiſtance! Next morning the beach was covered with dead bodies that had been caſt on ſhore in the night!

Adieu! ye ſons of dire miſhap, adieu!
Your toils, and pains, and dangers, are no more;
The tempeſt now ſhall howl unheard by you,
While Ocean ſmites in vain the trembling ſhore *.

---

* See the "Shipwreck," a pathetic poem, written *con amore* by the ingenious captain Falconer, who, having narrowly eſcaped from a ſimilar diſaſter, paints the affecting ſcene from nature.

CASE III.

Attended with peculiar circumſtances.

CAPTAIN M'KAY, in a late pamphlet addreſſed to his father, gives ſome intereſting particulars reſpecting the ſhipwreck of the Juno, of which he was the ſecond officer. The ſhip, he remarks, was *crazy*, and greatly out of repair, before ſhe ſet out from Rangoon, bound to Madras. This circumſtance appears to have been the ſource of their ſubſequent misfortunes. For the veſſel, being unequal to ſuſtain the violence of the ſtorm which overtook them on their voyage, became leaky, and was caſt away on the coaſt; when the principal part of the crew miſerably periſhed. Out of ſeventy-two perſons on board, Captain M'Kay, with thirteen companions, only ſurvived. But, ſtrange to relate (for the fact, were it not ſo well atteſted, would appear almoſt incredible), this unhappy remnant of the crew, being left on the wreck, ſubſiſted not leſs than twenty-three days without food!

In deſcribing their unparalleled ſufferings during this forlorn ſituation, Captain M'Kay obſerves, that the ſenſe of hunger was very tormenting till the fifth day, when it gave way to the ſtill more diſtreſſing ſenſation of extreme thirſt. Theſe painful ſenſations, however, were greatly miti-

gated whenever rain fell copiouſly, and wet them through their clothes. But, finding the relief only temporary, he had recourſe to ſuch other expedients as were at hand.—Sea-water drank liberally, though it operated as a ſevere purgative, yet afforded conſiderable refreſhment. He next chewed pieces of lead, procured from fragments of the wreck, which, by producing a freſh flow of ſaliva, alleviated the intenſe thirſt. To ſilence the cravings ariſing from that aching void produced by long faſting, and which nothing but nutritious food can fully ſatisfy, he tried the experiment of forcibly compreſſing the region of the ſtomach with both hands, which always afforded immediate relief. Hardened and benumbed with their ſufferings, his unhappy comrades ſeemed to feel very little concern or ſympathy one for another.

The idea every now and then of hearing a gun, or ſeeing a ſail, when found only to be an illuſion, never failed to embitter their diſtreſs. When they gave up life as utterly loſt, they expreſſed leſs anguiſh; a ſtate of cruel ſuſpenſe being more painful than abſolute deſpair.

The preceding melancholy caſes of ſhipwreck are ſelected from ſeveral others, if poſſible, ſtill more deplorable; over which, however, to ſpare the ſympathetic feelings of the humane Reader, I

ſhall

ſhall draw the friendly veil. Theſe already related are ſufficient to ſuggeſt a variety of reflections; and it ſeemed neceſſary to give them in detail, as they may afford ſome uſeful inferences for the benefit of future navigators.

It appears then, in conformity to what has been already obſerved, that accidents from ſhipwreck happen moſt frequently near ſhore; and that communication between the diſtreſſed veſſel and the coaſt being cut off, prevents that timely aid which might otherwiſe be adminiſtered.

2. That the crazy ſtate of a ſhip, previous to the voyage, muſt inevitably increaſe the danger, and haſten, on the fatal cataſtrophe.

3. That ſailors expert in the art of ſwimming frequently eſcape, while their helpleſs companions miſerably periſh.

4. That life may ſometimes be ſupported without food the ſpace of twenty-three days; a much longer period than is commonly ſuppoſed, and which can only be explained on the principle of abſorption. Hence the refreſhment experienced by Captain M'Kay and his companions from their bodies being wet with rain. Hence alſo the relief which Captain Bligh and his men, in their late ſurprizing voyage, obtained, not only from expoſure to rain, but alſo from immerſing their clothes in the ſea.

The cauſe of this ſingular effect ſeems to be this: The innumerable lymphatic ducts, opening every where over the whole ſurface of the ſkin, exert their abſorbent power in proportion to the demand. Here, the ſailors' bodies being exhauſted by long faſting, and nature reduced to her *dernier* reſource, the lymphatic ſyſtem imbibed with avidity the water, but rejected the ſalt; otherwiſe the extreme thirſt, inſtead of being mitigated, would have been greatly increaſed.

5. It further appears, from Captain M'Kay's obſervation, that the painful ſenſation of extreme hunger may be greatly alleviated by compreſſing the region of the ſtomach.

6. That this diſtreſſing ſymptom goes off about the fifth day, and gives way to intenſe thirſt, which, in its turn, may alſo be mitigated by chewing lead, as practiſed by ſailors, in hot climates, who aſſuage their thirſt by rolling in their mouths a leaden bullet. The poiſonous quality of the metal, however, renders this a doubtful expedient. To allay thirſt, and ſupport the ſyſtem, Dr. Franklin, with more propriety, had recourſe to bathing in ſea-water ſeveral hours every day, and obſerved that, however thirſty he was before immerſion, he never continued ſo afterwards: nor did he ever perceive in his mouth any taſte of ſaltneſs.

In caſe of extreme ſcarcity of freſh water, in long voyages, ſailors, he remarks, might derive ſimilar advantage by dipping their wearing apparel in the ſea, and that without the leaſt danger of cold.

7. That life may be protracted many weeks by mere water alone, will appear leſs wonderful when it is conſidered, that water conſiſts of vital and inflammable air, and moſt probably undergoes a decompoſition in the human frame; that its vital portion renews and invigorates the living principle, while its inflammable part ſupplies nutrition. For it can ſcarcely be doubted, that marine reptiles and fiſhes, that can ſubſiſt on water alone, are endowed with a power of decompoſing it, and converting the inflammable part to their nouriſhment.

Hence, the ſwarms of inſects in hot climates where inflammable air is copiouſly generated from putrid ſubſtances. Like plants, they thrive amidſt putrefaction; convert the noxious effluvia into ſuſtenance; and reject the vital air deſtined to ſuſtain breathing animals. Were it not for this wiſe proviſion, the pernicious effluvia would, in ſuch climates, prove a fruitful ſource of peſtilence, and render a large portion of the globe uninhabitable.

On emergencies, therefore, when freſh water is wanting, ſea-water, under proper management,

may

may afford a better ſubſtitute than is generally imagined.

Here it deſerves notice, that water may be preſerved ſweet, during the longeſt voyage, by the following ſimple proceſs. Having filled the caſk with water in which quick-lime is quenched, let it ſtand till the inſide of the caſk has acquired a thin coat of lime; then rinſe out the caſk, and re-fill it with freſh water for the voyage, adding a few handfuls of recent charcoal duſt, a portion of which may be alſo kept for uſe in a bottle tight-corked. It not only preſerves water ſweet, but even reſtores putrid or corrupt water, which only requires afterwards to be filtered. This, and all other extraneous ſubſtances contained in water, not by *ſolution*, but *diffuſion* only, may be moſt expeditiouſly ſeparated by Mr. Peacock's Patent Machine, which has been found, by experiment, to filter 720 gallons of water in twenty-four hours, diveſting it of all ſuch accidental impurities. This invention promiſes much utility to perſons by land, as well as by ſea, and may be ſeen at the Surveyor's Office, Guildhall, London.

8. To prevent in future voyages the terrible calamity of famine at ſea, portable ſoup and farinaceous vegetables ought to conſtitute part of the ſhip's proviſions. To aſſuage the ſenſation of hunger, and enable the body to bear long faſting,

ole-

oleaginous ſubſtances are well adapted, as beef and mutton ſuet, rich cheeſe, freſh butter, ſweet almonds, alſo mucilaginous ſubſtances, as ſalop, tapioca, and particularly gum arabic, which, according to M. Haſſelquiſt, ſupported more than one thouſand perſons in the deſarts of Arabia, who, being left deſtitute of other proviſions, ſubſiſted upon it ſolely during the ſpace of two months.

9. The treatment of ſhipwrecked mariners when nearly exhauſted by cold and hunger, demands no ſmall circumſpection. At firſt they loath the ſight of meat; but on a ſudden the appetite grows voracious, and prompts them to devour more food than the digeſtive organs can aſſimilate. Their native warmth alſo, being greatly impaired, ſhould be very gradually reſtored by a tepid bath; and the food ſhould conſiſt of new milk, barley-water, or weak broth, in very ſmall quantity, which, in this ſtate of more than infantile debility, will be found ſufficiently powerful; avoiding, at the ſame time, the common error of pouring down wine, ſpirits, or other ſtimulating cordials, which, inſtead of ſupporting life, too often exhauſt the feeble remnant of vitality *.

* See Dr. Percival's affecting narrative of the ſufferings of a collier, who was confined ſeven days in a coal-pit without ſuſtenance. Memoirs of the Philoſophical Society of Manchester, vol. II. p. 467.

Causes of Storms and Shipwrecks—

—whether influenced by local circumſtances.—

THE moſt obvious cauſe of ſhipwreck, according to the language of ſeamen, is a heavy gale of wind with a lee ſhore.

Though the tides are produced by the joint influence of the ſun and moon, the ſtormy waves depend wholly on winds of the higher order. Air poſſeſſes not only a chemical but mechanical attraction for water, ſuperior to that which obtains between the component parts of the latter. When air, therefore, rapidly ſweeps along the ſurface of water, it forcibly ſeizes the upper ſtratum, and raiſes it aloft in a ſurprizing manner, until the water, by its ſuperior gravity, ſuddenly recovers its level. This powerful action and reaction between the contending elements conſtitutes a ſea-ſtorm, which, according to its violence, raiſes the billows from twelve to twenty feet, ſometimes to a much greater altitude, as in tornadoes and hurricanes, when the ſea (as the ſailors expreſs it) runs mountains high.

Now, hurricanes may proceed from local rarefaction, or whatever ſuddenly diſturbs the equilibrium of the atmoſphere, but principally from an accumulation of the electrical fluid, which has a powerful tendency towards pointed or angular

bodies

bodies to reſtore the balance. Hence, perhaps, it is, that lofty promontories, high cliffs, and rocky projecting ſhores, are ſo often infeſted with violent ſtorms, while the main ſea remains calm and unruffled. In ſuch ſituations, the effects of the warring elements are often dreadful, and the diſaſters produced amongſt the neighbouring veſſels truly deplorable.

Of a tempeſt at ſea, Thompſon gives the following ſublime and pictureſque deſcription :

" Then comes the Father of the Tempeſt forth
Wrapt in black glooms———
Laſh'd into foam, the fierce conflicting brine
Seems o'er a thouſand raging waves to burn ;
Mean time, the mountain billows to the clouds
In direful tumult ſwell'd—ſurge after ſurge,
Burſt into chaos, with tremendous roar !
* * * * * * * *
They boil and wheel and foam and thunder thro'
And anchor'd navies from their ſtation drive !"

Along the Britiſh and other neighbouring coaſts, the equinoctial ſtorms are generally the moſt formidable. As theſe are to be expected a their reſpective ſeaſons, all prudent navigators ought to provide againſt their periodical return.

In tropical climates, and along the abrupt coaſts of the Leeward Iſlands, the moſt violent hurricanes prevail between the 25th of July and the

the latter end of September, the wind blowing from the N. or N. W. in direct oppoſition to the trade winds.

Prognoſtic ſigns of a Hurricane.

THE native Carribees of St. Dominica and St. Vincent, from long obſervation, can with ſurpriſing accuracy foretel the approach of the hurricane ten or twelve days before it arrives,—a circumſtance of no ſmall moment to inexperienced navigators.

All hurricanes, they obſerve, happen about the period of the lunations, particularly at full moon, and may be predicted from the following ſigns:

1ſt. The ſun exhibits a blood-like redneſs.—The moon ſurrounded with a halo, the ſtars with a bur, and ſeem larger than uſual.—The ſky, towards the N. W. dark and gloomy.—Wells and deep caverns ſend forth a hollow ſound.—The ſea, an unuſual rank odor.—Miſts diſappear on the tops of mountains—a calm ſucceeds—when on a ſudden the hurricane burſts forth with incredible impetuoſity, twiſts trees aſunder, diſmaſts ſhips, and drives them a-ſhore, ſometimes above twenty yards beyond the water-mark!

As ſoon as the wind veers from N. W. to E. or S. E. the hurricane ceaſes; yet, what is remarkable, the raging of the waves continues and

even

even increaſes in proportion to the *momentum* of the impulſe already acquired, till at length, the tempeſt having ſpent its fury, the billows ſubſide, and the ſea gradually reſumes its former tranquillity. Hence may be alſo underſtood, why the tide continues to flow at leaſt forty-eight hours after the full and change; its altitude at Briſtol often amounting to forty-ſeven feet, or upwards.

Beſides tempeſts at ſea, including hurricanes, thunder-ſtorms, and water-ſpouts, there are ſtill other cauſes which too often produce ſhipwreck.

Sea-faring men, inured to hardſhips, and taught by example to deſpiſe dangers, are often totally regardleſs of forecaſt, and even of the neceſſary means of ſelf-preſervation. To unpardonable negligence, or fool-hardineſs, therefore, rather than to unavoidable misfortune, may many of their diſaſters be juſtly imputed. To what elſe can be attributed the entire loſs of the Royal George, and of the Haſwell, with their reſpective companies? or of the late tremendous exploſion of the La Coquille? and other ſtill more recent diaſters?

From the maſter down to the common tar, the ſame *nonchallence*, the ſame contempt of danger, frequently pervades the whole crew. Thus, when the maſter embarks on board a decayed leaky veſſel unfit to bear ſtreſs of weather; when the ſleepy pilot, dozing at the helm, runs the ſhip on

ſome

ſome noted rock or lee-ſhore; or, when the drunken ſailor, with a lighted candle, careleſſly approaches too near a caſk of ſpirits, or gunpowder; what in the name of wonder can be expected but inevitable ruin! Under ſuch management, can we be ſurpriſed that fatal accidents befal ſo many of our trading veſſels, not only in long voyages, but even in making a ſhort trip acroſs the channel? It was by a very different conduct, guided by prudence and marked by unremitting attention, that Captain Cook, and other expert circum-navigators, performed their ſucceſsful voyages round the globe; and that Captain Bligh, in an open boat amidſt frequent ſtorms, traverſed the great Pacific Ocean.

Hints for improving naval architecture.—For rendering boats incapable of upſetting or ſinking.—
—The Life Boat at Shields—its ſingular utility.

THOUGH ſhipwreck, under certain circumſtances, perhaps, cannot by any human means be prevented; yet there ſeems reaſon to hope it may, in future, be rendered leſs frequent and leſs fatal, by obſerving the ſubſequent precautions.

1. Reſpecting the ſtate of the ſhip.
2. The conduct of the commander.

1ſt. From late diſcoveries reſpecting floating bodies, and a comparative view of the ſhips of different nations, the board of naval architecture will, it is hoped, be enabled to ſuggeſt many uſeful improvements in the conſtruction of all kinds of veſſels, and by well conducted experiments to reduce the art of ſhip-building to a more regular ſcience.

In the interim, let ſhips of every denomination, previous to the intended voyage, undergo a more ſtrict examination by competent and impartial judges, that ſuch as are materially damaged or worn out be condemned, and none permitted to ſail unleſs they can be ſafely warranted.

2dly. Let tall-maſted veſſels and ſhips of burthen be well armed with electrical conductors. For though it be beyond human power to arreſt the rapid lightning in its flight, yet reaſon, enlightened by experimental philoſophy, has taught us how to diveſt it of a conſiderable part of its terrors, by the uſe of metallic rods. But, in order to prevent their being melted by the lightning, let a pointed piece of black lead be inſerted at their tops, projecting about two inches above the metallic ſockets; and to guard them againſt ruſt, which would deſtroy their conducting power, let the rods be ſheathed with tin or copper.

3dly. To render ſhips more durable with leſs expence of timber, it has been lately recommended, by Mr. Boſquet, to fill up all the void ſpaces between the planks, lining, and timbers, with a compoſition of melted pitch, tar, and glue, adding a certain quantity of cork-ſhavings and charcoal duſt. This not only prevents rats harbouring in the cavities, but alſo the accumulation of bilge water and foul air, ſo highly injurious to mariners. Ships thus fortified by his patent invention, being rendered ſound and durable, would, he imagines, rarely be ſubject to leakage or foundering at ſea *.

In the conſtruction of ſhips, for ſafety as well as ſwiftneſs, Sir George Shee adviſes to add to their length and width, and to diminiſh conſiderably their height. By reverſing this, and by crowding too much ſail, light veſſels and pleaſure barges become unfit to encounter ſudden guſts of wind, and are frequently upſet.

4thly. To prevent accidents of this nature, Mr. Miller of Dalſwinton, in his ſpecification of a patent invention of a veſſel for paſſengers or parties of pleaſure, incapable of being upſet, propoſes his flat-bottomed boat, which draws very

* The Specification of the invention may be ſeen in the Repertory of Arts, Vol. IX. p. 381.

little water. It moves with wheels in the water, wrought by capſtans; roomy between decks for the accommodation of numerous paſſengers, and requires no pumps *.

The ſeamen of Trinity Houſe, at Leith, recommend, for ſafety, a boat carrying more ballaſt than neceſſary for ordinary ſailing; over the ballaſt, bags filled with cork, riſing higher than the gunnels; the whole properly ſecured by ſail-cloth and ropes. By this contrivance, they alledge, that all perſons on board, or even others holding by the boat, will be carried ſafe through the moſt ſtormy breakers. On ſimilar principles, and to anſwer the ſame end, other boats have been conſtructed by ingenious perſons in America, in Italy, and in Holland. The patent boat of Mr. Lukin, coachmaker, in London, which, we are told, can neither overſet, nor ſink, though filled with water, is formed with projecting gunnales, ſloping from the top, armed with cork, and ſecured with leather or tin. Of which a more full deſcription is given in the "Repertory of Arts," vol. III. p. 10.

Count Berchtold, of Tuſcany, well known for his zeal in the cauſe of humanity, not long ago preſented to the Society for the Encouragement of Arts, in London, a curious model of a boat, with

* Repertory, Vol. VI.

neceſſary apparatus for aſſiſting perſons in danger of drowning, by the breaking of ice, which may be viewed at the Society's rooms, in the Adelphi, by application to the ſecretary.

The Greenlanders have invented a boat of a ſingular conſtruction, reſembling a huge inflated bladder, inveloped with ſeal ſkins, and rendered water-proof, in which they can ſit at eaſe, while they ply their oars, and thus encounter their ſtormy ſeas in perfect ſafety. One of theſe boats may be ſeen in the Britiſh Muſeum; or an accurate deſcription with an engraving, in the firſt volume of Crantz's Hiſtory of Greenland.

The LIFE BOAT, *at Shields.—Its ſingular Utility evinced by repeated Trials.—*

THIS noted boat, by which, within the courſe of a few years, many lives and much property have been ſaved, was built by Mr. Greathead, an able ſhip-builder, and generouſly preſented to the inhabitants of South Shields by his Grace the Duke of Northumberland, by whoſe beneficence North Shields has alſo ſince been ſupplied with a boat of a ſimilar conſtruction.

Mr. Fairleſs, who furniſhed ſome uſeful hints reſpecting the original plan, deſcribes the veſſel "as meaſuring 30 feet by 10; reſembling, in form,

form, a common Greenland boat, only flatter in the bottom. The weight of cork employed in the conſtruction is about *7 cwt*, with which the boat is lined, inſide and outſide of the gunnales, two feet in breadth; the ſeats being alſo filled with the ſame: rowed by ten men, double-banked, and ſteered by one at each end with oars, being alike at both ends, and with a contrivance to prevent ſinking in the ſand.

"She draws very little water, and can carry twenty perſons, even when full of water. Being water-proof, and rendered boyant by cork, ſhe keeps afloat, preſerving her equilibrium without danger of overſetting, and is able to contend againſt the moſt tremendous ſea, having never in any one inſtance yet failed of conveying a diſtreſſed ſhip's crew into ſafety.

"In going off with her, in the higheſt ſeas and broken water, the men teſtify no dread; and, though cork-jackets were provided for them, yet ſuch is their confidence in the boat, that they now refuſe to uſe them.

"Indeed, ſhe has ſurpriſed every intelligent ſeaman that has ſeen her contend with the boiſterous waves. Any farther deſcription I can give," adds Mr. Fairleſs, "will not be equal to a view of the model kept at Northumberland Houſe, in London, which, I make no doubt, you may ſee. Such a veſſel ought to be provided with high

wheels, to convey it to the place where it is immediately wanted.

"The boat complete, and copper-nailed, coſt about 150*l.*" But, in the moment of diſtreſs, what ſhipwrecked mariner would not think this a cheap purchaſe, and pronounce the value of ſuch a boat as truly ineſtimable!

Other late diſcoveries for the prevention of Shipwreck, and preſervation of Mariners.

[*From American and Batavian correſpondence.*]

1. AN expert American ſeaman recommends to mariners the experiment of hanging out a line of cable over the ſtern of a ſmall veſſel, or boat, in a rough ſea, as this appendage ſerves to make a long wake, and will be found to enable the veſſel (according to the ſea term) to live much longer in a heavy gale. Little danger, he obſerves, is to be apprehended from a long ſweeping ſwell of the ſea; the miſchief generally ariſes from overhanging ſurges, which at once break in and overwhelm the veſſel. Having often experienced, in ſtormy weather, the beneficial effects of a long coil of rope fixed to a flat piece of wood, and appended to veſſels, he thence endeavours to explain the extraordinary efficacy of the tow-line in balancing the ſhip, and lowering the high-ſwelling ſurge.

2. From

2. From the Tranſactions of the Philoſophical Society, at Philadelphia, we learn, that Mr. Hopkinſon has invented an inſtrument, with a graduated tube, which, from the difference of ſpecific gravity between oil and water, by its riſe and fall, accurately meaſures the ſhip's progreſs. Alſo, a curious ſpring block, by which ſailing is greatly expedited; for which uſeful invention he obtained the Society's gold medal.

3. Mr. Gearſon, of York-town, Pennſilvania, has lately obtained a patent for an important invention, by means of which, we are informed, that a veſſel whoſe bottom is ſo ſhattered, that the ordinary pumps could not, for one hour, prevent her ſinking, will be effectually kept buoyant; and, though under a preſs of ſail, be incapable of being overſet by the heavieſt gale.

4. A gentleman of Rotterdam has invented a new floating machine, which, though ſmall, is capable of holding four men commodiouſly, and may be enlarged ſufficiently to accommodate fifty, if required. So curious is its conſtruction, we are told, as to enable it to withſtand the utmoſt fury of the winds and ſeas. It can neither overſet, nor ſink, and may therefore, in the moſt ſtormy weather, be ſteered whatever courſe the pilot ſhall ſee neceſſary. Theſe laſt may be con-

ſidered as different modifications of the life-boat, conſtructed with the ſame humane views, though probably without any communication between the reſpective artiſts. Were packet-boats deſtined to convey important diſpatches thus conſtructed, many unfortunate accidents might be prevented.

The comparative value of theſe and other laudable inventions, whether produced by foreigners, or our own countrymen, muſt reſt with their ingenious authors, at leaſt, till their reſpective merits be fully aſcertained by actual experiment. Were models of every new and uſeful contrivance, of this nature, conſigned to the board of Naval Architecture, for public inſpection, the diſplay of ſuch an aſſemblage of mechaniſm would excite emulation, and the reſult of ſatisfactory trials, if communicated from time to time, might prove highly important to the maritime world.

To aſcertain the ſhip's burthen.

5. It is certain, that a ſhip will carry a weight equal to that of a quantity of water, of the ſame bulk with itſelf, deducting, however, the weight of metal employed in its conſtruction; for the wood is nearly of the ſame weight with water. Were it not for the iron, or other metal, a ſhip might float though full of water. However it be loaded, therefore, it will not entirely ſink as long

as

as the weight of its cargo is leſs than that of an equal bulk of water.

Now, to aſcertain this, the capacity of the ſhip muſt be meaſured. Suppoſe it to be 1000 cubical feet, multiply that by 73 pounds, the average weight of a cubical foot of ſea-water (taken at a proper diſtance from ſhore), which gives in the product 73,000 pounds for the weight of a bulk of water equal to that of the ſhip, the burthen of the ſhip being 73,000 pounds, or 36 ton and a half, reckoning a ton 2000 pounds, that being the weight of a ton of ſea-water. If the cargo exceeds 36 ton and half, the ſhip will ſink; if juſt 73,000 pounds, ſhe will ſwim, though very deep in the water, and on the very point of ſinking. And though ſhe may float at ſea, ſhe will ſink on entering the mouth of a river; freſh water being ſpecifically lighter than ſea-water, and in the proportion of about 63 to 73.

Previous to the voyage, therefore, the ſhip's burthen ought to be more carefully aſcertained than, perhaps, raw inexperienced navigators have hitherto imagined.

The ſhip's pumps.

6. The pumps ought to be formed on the moſt approved plan, and kept in perfect order. Some prefer

prefer Mr. Fulton's patent pump, worked by a cylinder, and deſcribed in the Repertory of Arts, vol. III.

Mr. Clarke, Surgeon, at Sunderland, propoſes an eaſier and more expeditious method of working the pumps, by means of a curved lever, which acts by an eaſy motion of the body, as in rowing. It has been found, on trial, to deliver twice the quantity of water, and with far leſs labour, than that with the brake--a circumſtance of no ſmall conſequence, eſpecially when ſeamen are almoſt worn out with ſickneſs or fatigue *.

Mr. Dearborn, an ingenious American mechanic, has accompliſhed a ſtill farther improvement, by conſtructing a new machine to anſwer the double purpoſe of a pump and a fire-engine †.

Mr. Taylor, of Southampton, we are credibly informed, has invented a ſhip pump, which, in point of ſimplicity and ingenuity, ſurpaſſes all others, and bids fair to ſuperſede them in the Britiſh navy.

Ship's compaſs.

7. The magnetic power of the mariner's compaſs is liable to be diſturbed by various accidents, as the rolling of the ſhip in a rough ſea, the exploſion of the great guns, and particularly lightning. Nay, even the electricity of the glaſs

* See Repertory, Vol. IX. † Ibid. vol. III.

cover,

cover, when excited by the ſlighteſt accidental friction, is ſufficient to alter its direction; but this can be ſoon remedied by wetting the glaſs, which carries off the electricity. In thunder ſtorms at ſea, the polarity of the needle has ſometimes been ſuddenly reverſed, and irreparably damaged, by the North and South points changing their ſtation, occaſioning, at the ſame time, dangerous errors. By this accident, a ſhip has been known to take a retrograde courſe, and ſteer above 100 leagues by a needle, the polarity of which had thus been totally changed *.

The compaſs, though long known, was imperfect and liable to many inconveniencies, till at length, by the ingenuity of Dr. Knight, it was greatly improved; and has ſince undergone a further emendation by Mr. Smeaton. The improvement conſiſts in the ſhape and temper of the needle; in the diſcovery of proper means for reſtoring the loſs of magnetiſm in a voyage; and, finally, in rendering it leſs ſubject to be influenced by the motions of the ſhip. Theſe contrivances, though found too delicate always to ſuſtain with impunity the rude ſhocks of a tempeſtuous ſea, or the more violent ſtroke of lightning, are, however, the beſt that have been yet diſcovered. Therefore, as this improved compaſs is allowed to be ſuperior to others, and is now generally uſed in the royal

* Phil. Tranſ. Abridged, by Lowthorp, vol. II. p. 180.

navy,

navy, it ought certainly to be provided for all merchant ſhips, particularly on long voyages.

Ship's Rudder.

8. The power of the rudder being reducible to that of the lever, and oblique action of the water, the moſt advantageous angle made by the helm from the keel, mathematicians have fixed at 54° 44′. Euler recommends an obliquity ſomewhat leſs; and eſtabliſhes this rule, that an obliquity of 48° will, in general, produce the moſt powerful effect; though experience teſtifies, that a ſhip ſteers tolerably well when the rudder makes an angle of only 35°.

A convenient ſubſtitute for the loſs of a rudder has been invented by captain Pakenham, for which uſeful device the Society of Arts preſented him with a gold medal. The method, being deſcribed at large in the Society's Tranſactions, need not be repeated in this place.

Maſts.

9. To the mechanical genius of captain Pakenham, the navy is alſo indebted for an eaſy, cheap, and expeditious, method of reſtoring a maſt, when injured, or decayed, by ſimply inverting the maſt and turning the heel to the head; of which

which the Society, in the 10th volume of their Tranſactions, have given a full deſcription, illuſtrated with an engraving.

The ſudden damage which maſts frequently ſuſtain from ſea-ſtorms and naval engagements, and which, in the ordinary way, require from ſix to eight weeks to refit, may thus, we are aſſured, be repaired within forty-eight hours; and that this method is equally applicable to all ſhips, from a firſt-rate, to the ſmalleſt merchantman—a matter of no ſmall conſequence on long voyages, or in time of war.

Nautical Apparatus.

10. A ſhip, properly equipped for a long voyage, ought to be provided with a complete ſet of nautical inſtruments, including an accurate thermometer, barometer, and time-piece. Alſo, a life-boat, cork jackets, cords, drags, buoys, and other implements for the prevention of drowning.

Thermometer.

From the reſult of three ſucceſſive voyages from Europe to America, captain Williams, under the direction of Dr. Franklin, found the temperature of the main ocean, out of ſoundings, at leaſt

leaſt ten degrees warmer than in ſhallower water near the coaſt. Hence the thermometer may ſerve a new and important purpoſe in pointing out the near approach to ſhore; alſo, in detecting latent rocks, or banks of ſand or coral, concealed under water. Is the decreaſe of temperature owing to theſe ſolid bodies acting as conductors, and thus conveying off the heat?

Nautical Time-piece.

A curious and unſuſpected cauſe of inaccuracy in watches, or time-pieces, has lately been diſcovered by an ingenious artiſt, which well deſerves notice. The balance, being made of ſteel, is very liable to acquire a polarity, which diſturbs the regularity of its movement, according as the watch happens to be placed North and South, or in the vicinity of a knife, a key, or other ſteel utenſil. On trying a variety of ſteel balances, by floating them on cork, placed on the ſurface of water, Mr. Varley could ſcarcely ſelect one that did not betray ſome ſign of polarity; nor can this be eaſily prevented, but by ſubſtituting a balance of gold, or ſome other metal. May not this be one reaſon why that grand *deſideratum*, a perfectly correct time-piece for diſcovering the longitude at ſea, has not yet been produced?

To prevent accidents during long voyages, the Tranſactions of the Royal Society of London ſuggeſt many important hints; which, however, for the ſake of brevity, muſt be omitted, by referring the reader to the reſpective paſſages, *viz.*

1. To preſerve veſſels from the worm, by a more cheap and durable method than that of ſheathing; alſo, to prevent leakage from the ſame cauſe.—See Phil. Tranſ. vol. VIII. p. 6192.—Vol. XLIII. p. 370.

2. To preſerve the health and lives of men crowded in ſlave ſhips, and tranſports, by ventilators, and other means.—Vols. XLIV, and XLVII. p. 211.

3. To meaſure the ſhip's way more correctly than by the log, &c.—Vols. XXXIII, and XXXVIII.

Alſo, a ſtill later method, with improvements. See Memoirs of the American Philoſophical Society, vol. II.

Hints reſpecting the Conduct of the Captain and his Mates.

HAVING briefly diſcuſſed the principal objects reſpecting the ſtate of the ſhip, and the precautions neceſſary to be taken previous to the voyage, we now proceed humbly to ſuggeſt a few

few hints proper to be obſerved by the maſter and his mates.

1. Having provided all the requiſites neceſſary to the complete equipment of the veſſel, it becomes the maſter to uſe every neceſſary precaution againſt diſaſters, and to be prepared to meet the event whatever it may be.

2. Like the intrepid captain Riou, and the gallant and humane captain Woodyear, he ſhould reſolve, in caſe of diſtreſs, to preſerve diſcipline through the whole ſcene, and to diſcharge his duty by being the laſt man to quit the ſhattered veſſel. By thus manfully preſerving his authority, good order will be kept up till, poſſibly, ſome timely aid may be obtained, or the ſhip got into harbour. But if in the time of danger he quit his poſt, from that moment diſcipline is at an end, anarchy prevails, and ruin enſues.

3. His ſhipmates, and whole company under his command, in their ſeveral departments, muſt cheerfully obey his orders, and with alacrity give every poſſible aſſiſtance in the management of the veſſel, and in affording one another mutual aid.

4. In the critical hour of diſtreſs, to prevent the additional danger of ſtrife, or mutiny, let the captain reſolve to prevent intoxication. Should this prove impracticable, let him order every caſk of ſpirits to be ſtaved.

5. Dr. Franklin's experiment of ſmoothing the rough undulations of a freſh water-lake to the extent

tent of half an acre, by pouring on its ſurface a ſmall portion of oil, is extremely curious, though its efficacy in calming the waves of a troubled ſea, as recorded by Pliny, certainly wants confirmation. By ſuffering the wind to glide over it, as over a ſurface of ice, it ſeems rather calculated to prevent new waves forming, than to controul thoſe already formed.

Nevertheleſs, Count Bentinck, in the ſixty-fourth volume of the Philoſophical Tranſactions, gives a remarkable caſe, atteſted by the officers on-board, reſpecting a Dutch Eaſt India ſhip, which was happily preſerved in a ſtorm by gradually pouring into the ſea a conſiderable quantity of Olive Oil. Merchant ſhips, with large cargoes of oil, might eaſily put this matter to the teſt. At all events, empty caſks, in caſe of ſhipwreck, being well ſecured between decks, the air they contain may, in proportion to the ſpace they occupy, tend to keep the veſſel afloat; or, caſks bound to rafts may afford ſeaſonable means of ſaving thoſe perſons who cannot ſwim.

6. In tropical climates, and particularly in the Leeward Iſlands, the ſigns already mentioned, which precede the moſt dreadful hurricanes, ſeveral days before their arrival, if duly attended to in time, may enable the maſter not only to foretell the ſtorm, but to ward off the impending danger. Convinced of this by long obſervation,

that experienced ſeaman Captain Langford recommends the following precautions: "To keep "the ſhip ſailable with ſtore of ballaſt—ports well "barred and caulked—top-maſts down—yards "a-part laced—doors and windows well ſecured. "Let all ſhips at anchor quit the road, or they "will be driven a-ſhore. As the ſtorm always "begins at North and North-Weſt, till it comes "to South-Eaſt, when its fury ſubſides; let them "run to the South for ample ſea-room, and for "drift of *the* South Weſt, and there wait the "event." Obſerving theſe cautions, he providentially weathered out five dreadful hurricanes without the loſs of ſail, yard, or maſt. Other commanders, he adds, who liſtened to his predictions and followed his advice, likewiſe eſcaped damage, and returned ſafe *.

7. Where the violence of the tempeſt baffles all human forecaſt, and the ſhattered veſſel ready to ſink becomes totally unmanageable, when ſignals of diſtreſs have been repeated in vain; and when terror and diſmay hang on every countenance, it requires no common ſhare of fortitude in the Commander to act with that coolneſs, prudence, and promptitude, which the exigency of the caſe ſo evidently demands.

Shipwreck being inevitable, it behoves him to exert himſelf to ſave as many lives as he poſſibly can, by a ſpirited and impartial conduct,

* Phil. Tranſ. Abr. Vol. II. p. 105.

and

and by a proper diſtribution of the cork waiſt-coats, ropes, implements, and whatever may ſeem uſeful; to guard againſt the boats being ſuddenly over-crowded, and alſo to be watchful on ſuch critical occaſions, that men apparently dead from drowning, or other accidents, be not haſtily thrown overboard, until ſuitable means of recovery have failed, or life be totally extinguiſhed *.

The Captain having thus diſcharged his duty, and exerted every effort to extricate his comrades from their calamity, though without the ſmalleſt proſpect of ſucceſs, nothing now remains but that he, as becomes a helpleſs mortal, commit himſelf and crew to the protection of Him "who rides in the whirlwind, and directs the ſtorm"—who can ſay to the raging ſea, "Hitherto ſhalt thou go, and no farther; and here ſhall thy proud waves be ſtayed." Impreſſed with ſentiments of this nature, ſo congenial to the mind of a dependent being, particularly in the hour of diſtreſs, Captain Falconer, in the true ſpirit of devotion, burſts forth into the following beautiful apoſtrophe:

"O! Source of Life, our Refuge and our Stay!
Whoſe voice the warring elements obey;
On Thy ſupreme aſſiſtance we rely,
Thy mercy ſupplicate,—if doom'd to die:
Perhaps this ſtorm is ſent, with healing breath,
From neighb'ring ſhores—to ſcourge diſeaſe and death."

Shipwreck.

* The mode of treatment has been already fully diſcuſſed. See New Inquiry on Vital Suſpenſion, Edit. 3. and Preſervative Plan annexed, page 40. on premature burial.

8. When a veſſel is caſt away, within a ſmall diſtance of ſhore (as in the late melancholy accidents, which gave riſe to theſe reflections), the country people haſten in crowds to view the affecting ſpectacle; ſome with an eager deſire to aſſiſt the wretched ſufferers; others, (horrible to relate!) for the ſole purpoſe of plunder! In order to prevent the cruel depredations of thoſe inhuman barbarians, a peace-officer ought always to be preſent, attended by the principal inhabitants; and aſſiſted, if required, by a military force *.

He

* According to the ancient law, goods caſt on ſhore by the waves belonged to the King: but the rigour of this law has ſince been wiſely mitigated in favour of the diſtreſſed proprietors: and it is now held, that, not only if any living animal eſcape, but if proof can be made of the property of any of the goods caſt on ſhore, within a year and a day, they ſhall not be forfeited as a legal wreck, but kept in the cuſtody of the Sheriff, during that period, unleſs previouſly claimed by the proprietor. If the goods be of a periſhable nature, the Sheriff may ſell them, and the purchaſe-money ſhall be liable in their ſtead.

2. Whoever ſhall ſecret any goods from a wreck ſhall forfeit treble their value. To ſteal even a plank from a ſhip in diſtreſs, ſays Judge Blackſtone, renders the party liable to anſwer for the whole veſſel and cargo.

3. Whoever perpetrates any wilful act, by which the ſhip is loſt, or plunders the veſſel in diſtreſs, or prevents the eſcape of any of the ſufferers, or hangs out falſe lights, to decoy a veſſel into danger, is declared by the law to be guilty of a capital felony, without benefit of clergy.

4. It

He ſhould be empowered to offer premiums for the preſervation of life and property, and to encourage watermen to face the boiſterous ſea in life-boats kept ready for the purpoſe. But on theſe mournful occaſions, the minds of the more humane and civilized ſpectators are generally too much agitated to ſupply the aid that is ſo much wanted, or to ſuggeſt any means of ſuccour, but ſuch as are totally inadequate. Nor is this to be wondered at: the moment of danger is not the moment of reflection, nor can new reſources be ſtruck out without the rare and happy talent of invention, and the cool reaſoning of a mind at eaſe. From want of a life-boat, and other neceſſary expedients, how often are ſhips and their cargoes irretrievably loſt, which otherwiſe might have been ſaved!

4. It is alſo enacted, that all head officers on the coaſt ſhall, on application being made to them, inſtantly ſummon as many perſons as are neceſſary to the relief of any ſhip in diſtreſs, on forfeiture of one hundred pounds. And, in caſe of due aſſiſtance given, ſalvage ſhall be paid by the owners, to be aſſeſſed by the neighbouring juſtices.

5. The income of wrecks being generally granted by the King to the Lord of the Manor, as a royal franchiſe, is ſeldom, it is hoped, rigorouſly claimed, but rather given up to the diſtreſſed ſufferers. Such claims, however, might be eaſily compromiſed, as the right owner, if diſcovered any time within a full twelvemonth, can ſuperſede the Lord of the Manor, or any other claimant, and by virtue of this law recover his property.

Hints for conveying Aſſiſtance to a Ship in diſtreſs, by forming a line of communication with the ſhore.

WITH what eaſe a large log of timber, or other heavy body, may be floated along the ſurface of water, by only a moderate-ſized cord attached to it, is well known.

Could means once be contrived of conveying ſuch a cord to or from a ſhip in diſtreſs, to form a line of communication between the maſt and a fixed point on ſhore, one grand difficulty would be ſurmounted. For to this line of communication might be fixed collateral cords, which being conveyed to the ſufferers, graſping the broken planks, or ſtruggling in the waves, many lives might probably be ſaved.

Now, were the line ſufficiently ſtrong, and made to paſs through a metallic cylinder, in form of a ſliding hoop, the ſhip's crew might, one by one, if placed thereon, ſlide along the rope from the maſt to the ſhore, as on an inclined plane. The ſhip's ſtores, buckled to the ſliding hoop, might be conveyed in the ſame manner; nay, even the ſhip itſelf, drifted on a neighbouring ſand-bank, or ledge of rocks, might, by men properly ſtationed on the beach, be thus towed ſafely to ſhore.

That this might be ſafely accompliſhed during a calm, can ſcarcely be doubted: but how to con-

vey

vey a line to or from the ſhip when all communication is cut off by a boiſterous ſea, and "when not even a boat dare venture out," muſt give us pauſe, and at firſt view appear impracticable.—Dangerous as ſuch an enterprize may ſeem, yet we now know, that a life-boat built on ſcientific principles, and manned with a few reſolute tars, is fully adequate to the taſk; ſuch a boat, however, being yet little known, and no where to be met with, except at Shields, recourſe muſt be had to other meaſures. Thoſe who have duly conſidered the theory of projectiles, will be beſt qualified to judge how far the following conjectures, when matured by experience, may bring to light new modes of deliverance.

1ſt, Suppoſe the diſtance not to exceed two hundred yards, might not a ſmall cord of that length be tranſmitted from the ſhip to the ſhore by a powerful ſky-rocket properly directed?

2d, By an arrow ſhot from a large bow of ſuperior force?

3d, By a cord fixed to a perforated bullet, and diſcharged from a muſket or ſmall piece of ordnance, taking care to firſt wet the cord to prevent its being fired by the exploſion? To the end of the ſmall cord thus conveyed to the ſhore, might be fixed a larger one, or even a rope, which, by means of the ſmall cord, might be drawn on board the ſhip.

4. Might not the conveyance of one or more cords be accompliſhed, with ſtill more certainty, from the people on ſhore to the diſtreſſed ſhip, by means of a ſtout water-ſpaniel, or rather by a well-trained Newfoundland-dog? Theſe ſagacious animals are known to delight in enterprize, and in reſcuing perſons in the act of drowning. Were they once brought to encounter a rough ſea, and, with cords faſtened to their collars, taught to plunge in at the word of command, making regular excurſions to and from the wreck, many valuable lives might probably thus be preſerved.

In ſuch diſaſters, not only the ſufferers, but ſpectators, are apt to loſe all preſence of mind; otherwiſe expedients might often be contrived for reſcuing helpleſs mariners in their diſtreſs.

6. Might not Dr. Franklin's experiment, with a large paper kite, deſerve a trial, eſpecially in the direction of a fair wind and lee-ſhore?

7. Might not a courageous rider, mounted on a ſteady well-trained horſe, ſometimes be very uſeful on theſe trying occaſions? The horſe, it ought to be remembered, ſwims with his noſe and eyes juſt above water; but, if imprudently checked by the bridle, it proves fatal both to him and the rider. The heroic conduct of Cornelius Voltimed, a Dutchman, at the Cape of Good Hope, can never be ſufficiently admired, nor his unhappy fate too ſincerely deplored. In order to

aſſiſt

aſſiſt fourteen perſons belonging to a veſſel ſtranded near the coaſt, his intrepid philanthropy impelled him to ride his horſe repeatedly into the ſea; having at length happily ſucceeded in ſaving all but one, his ſtrength failed, and in his laſt generous attempt to reſcue that one unfortunately loſt his own life!

The Dutch, in order to prevent plunder, ordain that no perſon ſhall approach the ſhip on pain of death; but this exceſſive zeal for the protection of property, ſo truly characteriſtic of the nation, generally damps every zealous effort for reſcuing the forlorn ſufferers. Had, therefore, the virtuous, the humane Voltimed even eſcaped the perils of the ſea, he would, nevertheleſs, have been tried for his life by his unfeeling countrymen!

8. Veſſels being moſt frequently caſt away on a lee-ſhore, the difficulty of ſending out aſſiſtance is greatly increaſed by that circumſtance; but, were the ſailors to fix a line to an empty caſk, or buoy, the direction of the wind and tide, being favourable, would forcibly impel it from the wreck towards the beach, where aſſiſtance would be ready to faſten the line to ſome neighbouring tree or poſt.

9. But what ſeems to bid faireſt for eſtabliſhing a line of communication with the ſhore, is a late contrivance invented by Mr. Bell, of the Royal Artillery, which, on reading the account, I am

glad

glad to find, coincides with my own propoſal, reſpecting the tranſmiſſion of a cord with a bullet by gun-ſhot. Concerning the reſult of the Experiment, the Society of Arts have publiſhed the following favourable report:

"To aſcertain the merit of Mr. Bell's invention, his Grace the Duke of Richmond having given directions, proper trials were accordingly made, by throwing a loaded ſhell * on ſhore from a ſmall mortar fixed in a boat, moored in the river Thames, above two hundred yards from the ſhore. To the ſhell was attached a rope, one end of which remained on board the boat. The ſhell, falling about a hundred yards within land, buried itſelf full eighteen inches in the gravel; when Mr. Bell and another perſon, on a raft floated by caſks properly ballaſted, hauled themſelves on ſhore in a few minutes, by means of the rope above mentioned.

"Theſe trials, having been repeated three times ſucceſſively with the deſired ſucceſs, and it appearing that the method, propoſed by Mr. Bell, of throwing a line on ſhore from a ſhip in diſtreſs, either ſtranded, or in danger of being ſo, promiſes to be of very important advantage to the maritime world; as by means thereof ſuch veſſel

* By which is meant a ſhell filled with lead, to which, a ſtaple or ring being fixed, the rope is to be made faſt. The ſhell thus loaded weighed about ſeventy pounds, being eight inches in diameter.

may

may obtain relief, any perſon, when landed, being enabled to ſecure ropes from the ſhip; or additional hands may thereby be conveyed from the ſhore to aſſiſt thoſe on board. In caſes of imminent danger, moreover, where all hopes of ſaving the veſſel may be loſt, Mr. Bell's method offers the moſt probable means of ſaving the crew.

"The Society therefore voted to Mr. Bell a bounty of fifty guineas, on his leaving with the Society a complete model of his contrivance; which model is reſerved in their Repoſitory, for the inſpection and uſe of the Public *."

That this, or other ſimilar inventions may prove uſeful in time of need, the apparatus muſt be provided beforehand; and ought to conſtitute a part of the ſhip's equipment previous to the voyage.

New Plan for the Prevention of a Ship's ſinking.

A Philoſophical Correſpondent has favoured me with the following communication, which diſplays much ingenuity, and ſeems worthy of further inquiry.

* Tranſactions of the Society of Arts, &c. Vol. X. p. 203. See alſo Raccolta di ſalvar, l'equipaggio d'un Baſtimento, &c. by Count Berchtold, with an elegant engraving, deſcriptive of the entire apparatus.

"As

" As you wiſh, my dear Sir, for further intelligence, reſpecting the means I ſhould propoſe for preventing ſhips from ſinking, I will endeavour to give you ſome idea of the power of the apparatus. Its conſtituent parts are theſe :

" A pair of cylindrical flexible veſſels, rendered impervious both to air and water by means of elaſtic reſin, and a four-barrelled pump for inflating them. As the contents of cylinders increaſe in proportion to the ſquares of their diameters, ſuch may be enlarged or diminiſhed to equal the power in requeſt ; conſequently both the pumps and air-veſſels may be readily apportioned to the duty they have to perform. From the diameter of the cylinders of the pump, to judge of their diſcharge, we muſt conſider the length of the ſtroke within the reach of middle-ſized men, and the number of diſcharges which may be made in a given time. With the aid of ſimple mechaniſm, I have accompliſhed a perpendicular ſtroke of two feet, capable of being repeated from ſixty to ſeventy times with eaſe, and from eighty to an hundred, if requeſted, in a minute.

" Air is a fluid of ſo volatile a nature, that the ſlighteſt preſſure impels it forward ; four men, therefore, can pump in more air than four hundred men can pump out water.

" That

"That veſſels of canvas may be made, at the ſame time, both flexible and air-tight, hath been demonſtratively proved already. Such veſſels, in their flaccid ſtate, occupy little more ſpace than a folded ſail, and conſequently are ſtowable in a narrow compaſs, till wanted. When immerſed and inflated, they remove a quantity of water adequate to the air which they contain, and, if fixed to a ponderous body, give it a degree of buoyancy proportionate to the water they diſplace. If this be equal to the difference in weight between that body and an equal bulk of the fluid which ſurrounds it, the whole will reſt ſuſpended even with or near the ſurface of the fluid. Enlarge their contents, and turn the balance in favour of the ſinking body, it will riſe and float. Fix ſufficient buoyant powers, therefore, to the ſides of a ſhip, in ſuch manner that they cannot break looſe; though a plank ſhould ſtart in her bottom, ſhe ſtill would float.

"One method, then, of preventing a ſhip from ſinking may be by a brace of air-veſſels occaſionally laſhed to her ſides. Another is, that of inflating a brace within her. To bring the former to effect requires a more perfect knowledge of the ſtrength of cordage than the moſt experienced rope-maker can boaſt. Our beſt calculators egregiouſly err in this particular; for, inſtead of its increaſing in proportion to the

ſquare

ſquare * of the diameter of the cordage, it comes far nearer to the proportion of the ſimple diameter only, as numerous experiments with the beſt new town-made ropes of various ſizes have convinced me. In the firſt mode, therefore, ſeveral difficulties remain to be overcome. The other is eaſy, conſiſting only in the ſimple operation of inflating air-veſſels within her. Let ſuch be placed in confinement either in the hold, between the decks, or under laſhings in ſmall open ſloops (to which your attention, Sir, ſeems chiefly paid), and they will operate with the moſt certain and powerful effect. For, though water, through its denſity, will expel air when at liberty, it can never incroach upon it when properly confined. Secure, then, but a due portion of the lighter fluid in eligible ſituations, and the ingreſs of the groſſer will be prevented. Conſequently, though the ſea run mountains high, and break over the ſloop with the moſt tremendous ſurge, if the crew can ſecure themſelves by laſhing to the maſt or rigging, and can at times have opportunity to ſupply the loſs of air (which, through the inaccuracy of valves, air-cocks, &c. will ſometimes happen), by a few additional ſtrokes at the pumps, ſhe will continue buoyant, in ſpight of elements, and be ſafe from the danger of ſinking. Small veſſels,

* See Falconer's Marine Dictionary, article CABLE.

under

under ſuch circumſtances, are liable, however, to be driven on ſhore; but, as they draw little water, their crews would probably be preſerved.

"As yours, Sir, is the cauſe of humanity, I have troubled you with theſe particulars; and hope, that, as a poſſibility of relief appears, ſome Philanthropic Society or other will be induced to exert their endeavours for the preſervation of the glorious tars of Britain."

As the preceding ſcheme is ſupported, by its ingenious author, on true philoſophical principles, and ſeems well calculated to keep a packet-boat, or veſſel of ſmall ſize, buoyant, as ſome ſucceſsful trials on the model ſeem to evince; yet, as the apparatus reſts on the inſtable baſis of air and water, might not ſome difficulty ariſe, during a ſea-ſtorm, particularly in ſecuring the air-cylinders, when deſtined to act externally on a large ſcale? It ought, therefore, to be ſubjected to the teſt of further experiment, both internally and externally, on veſſels of different rates, as the invention certainly merits the attention of thoſe who preſide over maritime affairs. For, what keeps afloat a firſt-rate ſhip of war, with its immenſe freight of guns, ſtores, ammunition, and men, but the difference of ſpecific gravity between air and water? What cauſes the ſhip to founder, but the accidental ingreſs of water, with a proportionate egreſs of air? Im-

pervious air-veſſels, therefore, properly placed, and inflated within the ſhip, would prevent the ſpaces thus occupied from being filled with water, and conſequently bid fair to keep her buoyant, even though her upper deck became level with the ſurface of the ſea. It was thus that the ſhip Guardian was prevented from foundering, whoſe packages and ſtores containing lighter fluids, ſuch as ſpirits and air, which the water being unable to expel, alone kept the veſſel afloat. Hence appears the utility even of empty caſks if rendered impervious and immoveably fixed between the decks of a ſhip in diſtreſs.

The importance of the Art of Swimming and Diving.

According to the obſervations of a late able writer, we are aſſured that, on board the King's ſhips, not half, ſcarcely a third part, of the crew can ſwim; and that, for want of this, ſeveral, in the courſe of a voyage, have been drowned *.

Hence perhaps may be explained why ſo many ſea-faring perſons annually periſh from ſhipwreck almoſt cloſe to the ſhore. If but few eſcape, even by

* See Mr. Jeremy Bentham's Inquiry on Pauper Management, in Young's Annals, for 1798, N° 174.

ſwim-

ming, it is becauſe few Britiſh mariners are expert ſwimmers; a proof that an art ſo neceſſary to all ranks of men is too much neglected, ſince even thoſe who are deſtined to a ſeafaring-life, and to man our fleets, are often wholly ignorant of it; at a period too when the life of every brave ſoldier or ſailor is peculiarly valuable. Should it be aſked, What can the art of ſwimming avail when contending armies ruſh to battle with the deſperate purpoſe to ſlaughter or be ſlaughtered? Or, in naval conflicts, when ſhips and men are at once blown into the air, or ingulphed in the boſom of the ocean? What can it profit when Death, thus in various ſhapes, ſweeps away by ſhoals unfortunate human beings? Is it not thus that bloſſoms come forth only to be blighted? That infants peep into exiſtence, ſuffer, and die? That men, like moths, play around the burning taper, and ſink into the flame? In ſhort, does not all this waſte of germinating life demonſtrate that it is not individuals, but the human ſpecies, that it is not men, but man, whoſe preſervation is ſo neceſſary to the completion of the grand plan of the univerſe?

But allowing this argument its full force, it ſtill affords no ſolid objection, ſince it cannot be denied that many individuals have been preſerved by ſwimming, who otherwiſe muſt have periſhed. But of what do our fleets and armies, nay, the

whole human ſpecies conſiſt, but of individuals? To preſerve, therefore, individuals, is virtually to preſerve and perpetuate the ſpecies, and conſequently to obey the dictates of nature, in completing the grand ſyſtem of the creation.

In order, then, to preſerve as many individuals as poſſible, the art of ſwimming and diving ought to be eſtabliſhed as an eſſential branch of national education; and, that our Britiſh youth may enjoy the ſame advantages which it procured to the ancient Greeks and Romans, it would be neceſſary in all ſea-ports and towns bordering on large rivers to inſtitute ſchools with experienced maſters for teaching ſyſtematically the art of ſwimming and diving. To execute this ſcheme in the moſt ſpeedy and effective manner, the illuſtrious Count Berchtold recommends the eſtabliſhing a law for prohibiting Captains of veſſels from engaging ſailors ignorant of ſwimming; and for nominating commiſſioners, before whom, national ſea-men ſhould be obliged to exhibit proofs of their progreſs in this art, previous to their embarkation.

Formed by nature for the watery element, fiſhes can with wonderful facility preſerve their equilibrium at different depths merely by contracting or dilating their air-bladders, a curious faculty, which, by the way, affords a beauti-

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ful illuſtration of the efficacy of impervious air-veſſels.

The young of other Animals alſo ſwim ſpontaneouſly; and though man, in conſequence of his peculiar ſtructure, cannot ſwim naturally, yet by practice he eaſily acquires the art, and when once learnt, it can never be forgotten.

Among ſavage nations, the young of both ſexes are inured to this exerciſe from early infancy. Hence they ſoon become adepts in the art, and, regardleſs of a rough ſea, they buffet the billows, and brave the dangers of the deep, which would ſoon ſwallow up leſs-experienced ſwimmers. From their daily employment in fiſhing and other aquatic expeditions, they alſo become able divers. In the Eaſt Indies, the negroe divers engaged in the pearl fiſheries are ſaid by habit to acquire ſuch a power of retaining their breath as to remain under water from ten to fifteen, nay even twenty minutes! The expert diver therefore, in all maritime dangers, has a decided ſuperiority over ordinary mariners who are novices in the art, being qualified not only to ſave his own life, but that of others; and, were it not for this, diſaſters from drowning would be far more numerous than they are. The celebrated Dr. Franklin, a moſt expert ſwimmer, declares it to be one of the moſt healthy exerciſes in the world. After uſing it an hour in the evening, he

found that he enjoyed cool refreſhing ſleep the whole night, even during the moſt ſultry heat of ſummer.

He mentions a curious experiment which he tried by holding the ſtring of a paper-kite and following its motion whilſt he floated on the ſurface of the water, by which he was carried on very pleaſantly and performed his uncommon aquatic expedition with great velocity, and without fatigue. Nay, he thinks it not impoſſible to croſs the ſea in this manner, from Dover to Calais, though the packet boat, as he humouroufly adds, is perhaps ſtill preferable.

In ſhort, were ſwimming and diving regularly practiſed by our ſailors and marines, it would not only contribute to their health and agility, but enable them to bear the frequent viciſſitudes of heat and cold to which they are expoſed; not to mention its known efficacy in curing inveterate diarrhœas and other obſtinate chronic diſcharges, to which they are liable.

It would alſo qualify them to encounter, without fear, a rough ſea, with a lee ſhore, for the purpoſe of fixing a line of communication with the coaſt. In this hazardous enterprize might not a paper-kite help to waft them through the ſtormy waves? In caſe of a naval victory, an experienced diver is enabled to plunge boldly into the deep to recover important diſpatches thrown overboard in the

the heat of an engagement, or with equal alacrity in the moment of victory, to reſcue the enemy in the act of drowning *. For it has ever been the glory and delight of an Engliſh ſeaman, expert in this noble art, to hazard his own life to ſave not only a friend but even an enemy, of which our naval hiſtory affords many illuſtrious examples.

Such tranſcendant acts of bravery and diſintereſted generoſity deſervedly render them dear to their country, and the admiration of their enemies!

Aſylum for Shipwrecked Mariners.

I cannot finally diſmiſs the preſent ſubject without teſtifying my ſurpriſe that, amid the numerous charitable inſtitutions eſtabliſhed in Great Britain, which at once proclaim the opulence, the generoſity, and the benevolence of the inhabitants, there ſhould ſtill be wanting one proviſion, of all others the moſt neceſſary, *viz.* a temporary Aſylum, or houſe of reception for ſhipwrecked mariners; where, for a few nights, they might be provided with dry clothes, warm

* In the Philoſophical Magazine, vol. III. is deſcribed a new diving machine, in which the diver can, at 60 feet under water, view objects around him, and go directly to the particular ſpot. In ſearching, therefore, for a perſon drowned, this would ſeem far preferable to the preſent uncertain mode of uſing drags or nets.

beds, proper diet, and other neceſſaries. For what avails it to have eſcaped the dangers of the ſea, if left to wander friendleſs and unknown, and at laſt to periſh on a ſtrange coaſt?

Therefore ſuch an aſylum, ever ready to open its friendly doors to diſtreſſed mariners of all nations, ought to be erected wherever the coaſt is peculiarly dangerous, where diſaſters moſt frequently happen, and where accommodations are moſt difficult to be obtained.

It may not be improper to add that the expence of building and ſupporting ſuch aſylums, though very conſiderable, ought in no wiſe to be deemed an inſuperable objection. This might be defrayed by a ſmall county rate, that would be ſcarcely felt by individuals, nay would be "lighter than the duſt of the balance" when put in competition with the important object of preſerving the lives of gallant ſeamen, and of adminiſtering comfort to unfortunate perſons deſtitute of every thing, and ready to periſh!

An object indeed, whether conſidered in a moral, a commercial, or a political view, cannot but be eſteemed peculiarly intereſting to the community, and conſequently intituled to the attention of the legiſlature; ſince to Britiſh ſeamen this maritime country is principally indebted not only for its commerce, but its protection.

On whom can the Civic Crown be more properly beſtowed than on thoſe active and humane

individuals

individuals who, through mechanical ingenuity, or perſonal bravery, reſcue their diſtreſſed fellow-creatures from the diſaſters of the deep, and reſtore them to their families, their friends and their country? "Nulla enim re homines propius accedunt ad Deos, quam ſalutem hominibus dando."

Since writing the above, I have been favoured with the following letter concerning an excellent inſtitution of this kind, eſtabliſhed, ſome time ago, under the auſpices of the benevolent Dr. Sharpe, late Archdeacon of Northumberland. The plan being unique in its kind, and comprehenſive in its nature, bids fair to realize every advantage that could be wiſhed, and therefore cannot but afford ſincere pleaſure to every humane reader.

"SIR,

"From the many ſhipwrecks which have happened on our coaſts, during the laſt year, and the number of lives and aggregate of property which muſt conſequently have been loſt, it is highly deſirable that ſome mode ſhould be adopted of leſſening the dangers which ſo frequently menace ſuch veſſels as approach the rocky ſhores of theſe kingdoms, in boiſterous and ſtormy weather. Each ſucceeding winter ſwells the melancholy liſt of ſufferers, and increaſes the numbers

of thoſe who have to mourn their relatives and friends, torn from them by the fury of the tempeſt. For this reaſon, I am anxious to lay before you, as a diſtinguiſhed member of the Humane Society, the following ſhort account of a very laudable plan that ought to be more generally known."

Humane Inſtitution at Bamborough Caſtle for the preſervation of lives and property from Shipwreck.

Signals from the Caſtle.

1ſt, "A great gun, a nine-pounder, placed at the bottom of the tower, to be fired in caſe any veſſel be obſerved in diſtreſs; and the ſignal to be varied according to circumſtances, in order that the Cuſtom-houſe officers may haſten to give all poſſible aſſiſtance, as well as to prevent the wreck from being plundered.

2d, In every great ſtorm, two men on horſeback are ſent from the caſtle, to patrole along the coaſt from ſun-ſet to ſun-riſe, that, in caſe of an accident, one may remain by the veſſel, and the other return to alarm the caſtle. Whoever brings the firſt notice of the diſtreſs is entitled to a premium,

mium, in proportion to the diſtance from the caſtle.

3d, A large flag is hoiſted when, on the Fern iſlands, any veſſel is ſeen in diſtreſs, that the ſufferers may have the ſatisfaction of knowing their diſaſter is perceived from the ſhore, and that relief will be ſent to them as ſoon as poſſible. In tempeſtuous weather, the flag will be kept up; a gun fired morning and evening, and a ſky-rocket thrown up, every night, from the North turret, till ſuch time as relief can be ſent.

Theſe are alſo ſignals to the Holy Iſland fiſhermen who, by the advantage of their ſituation, can put off for the iſlands at times when no boat from the main land can get over the breakers. Premiums are given to the firſt boat which puts off for the iſlands, with ſuitable neceſſaries and proviſions.

4th, A bell on the South turret will be rung in every thick fog, as a ſignal to the fiſhing-boats.

5th, A large weathercock is fixed on the top of the flag-ſtaff, for the uſe of the pilots.

6th, A large ſpeaking-trumpet is provided to be uſed when veſſels are ſtranded, or in diſtreſs

near

near the ſhore, of which there have been many inſtances *.

7th, An obſervatory is erected at the Eaſt turret of the caſtle, where a perſon is ſtationed every morning at day-break, in the winter ſeaſon, to watch the adjacent coaſt, for veſſels in diſtreſs.

8th, Maſters and commiſſioners of veſſels in diſtreſs are requeſted to make ſuch ſignals as are uſual among perſons in their unhappy ſituation."

The additional accommodations, ſupplied at this aſylum, are

" 1ſt, Rooms and beds for ſhipwrecked mariners, who will be maintained in the caſtle a week, or longer, according to circumſtances; and during the whole time provided with all manner of neceſſaries.

* The patent ſignal trumpet (lately invented by Mr. Fitzgerald), to which a piſtol or piece of ordnance can be ſcrewed, is ſaid to increaſe ſound to ſuch a pitch as to render the report of a common cartridge, fired through it, equal to that of a nine-pounder. Such an inſtrument therefore may prove highly uſeful to mariners in diſtreſs. Repertory of Arts, Vol. XI. p. 100.

As might alſo the Telegraph, which is now ſo much improved as to give ſignals by night, as well as by day.

2d, Cellars for wine and other liquors belonging to ſhipwrecked veſſels, in which they will be ſafely depoſited for one year, in order to be claimed by their proper owners.

3d, A ſtore-houſe for the reception of all manner of goods, ſtores, or implements belonging to a ſhip recovered from the wreck. They will be entered in a book kept for that purpoſe, giving the marks and deſcription of each, with the date when they came on ſhore.

4. Timber, blocks, tackles, handſpikes, rudders, cables, ropes, pumps, and iron, all in readineſs, for the uſe of wrecked veſſels, and delivered at prime-coſt.

5. Various implements for raiſing and weighing ſtranded veſſels, even of 1000 tons burthen, when ſunk on rocks, or in deep water; to be lent, gratis, to any perſon having occaſion for them, within forty or fifty miles along the coaſt, on giving proper ſecurity to re-deliver them to the truſtees.

6. Whenever dead bodies are caſt on ſhore, coffins, and the whole funeral expences, will be provided, gratis."

Such a ſcheme of diſintereſted benevolence, ſupported by princely munificence, and carried on in an obſcure corner of the iſland, without oſtentation, is far above all praiſe! When more fully

fully known, it ſurely cannot fail to awaken emulation, and give birth to ſimilar aſylums in this, and other maritime nations. For the whole community is intereſted in promoting it, and particularly all commercial companies, ſhip-owners, and inſurers.

Now, in order to eſtabliſh an inſtitution of this ſort, two methods preſent themſelves: Public Benevolence; or, an Act of the Legiſlature, levying a ſmall tax upon all veſſels. For the execution of ſo extenſive an undertaking, the latter ſeems preferable.

By ſuch an act, commiſſioners ſhould be appointed in London, and in all the maritime counties, under whoſe care the management of the different aſylums ought to be conducted. The expence of each building, on a ſmaller ſcale, need not to exceed four hundred pounds. A ſerjeant's guard, drafted from the neighbouring military, ſhould be regularly quartered at each ſtation, to preſerve order, and drive away plunderers. The neighbouring fiſhermen and inhabitants might be formed into a company, to aſſiſt on every emergency, and to be rewarded according to their exertions. The family of one of theſe might be allowed to reſide in the houſe, rent-free, to keep every thing in due order. At each ſtation an exact regiſter ought to be kept of every veſſel ſtranded, the articles ſaved, the names and places

of

of abode of the crews and paſſengers, &c. This regiſter, at the cloſe of the year, ought to be tranſmitted to the Commiſſioners in London, under whoſe inſpection the particulars ought to be publiſhed, for the ſatisfaction of parties concerned, and to enable the public to eſtimate the utility of the inſtitution, and induce neighbouring nations to imitate the plan.

Having now extended this voyage of obſervation beyond its original deſtination, behold new objects preſent themſelves to view, which ſolicit my attention. Being as yet, however, only a freſh-water ſailor, and my veſſel but indifferently rigged, I muſt forbear launching into a wider ſea: ſhall haſten, therefore, to ſteer my little bark into the friendly port to which it is bound.

THE END.

CORRIGENDUM.

Page 13, line 22, *after* expected, *read* at.

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