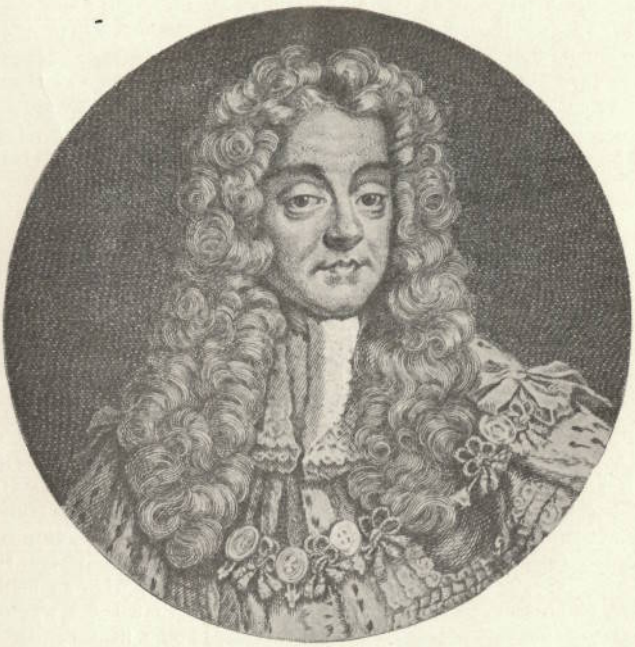
A SAILOR KING AND SOME OF HIS ADMIRALS.

By HERBERT S. JEANS.



JAMES II.

IF James II. was never, at any time, the most revered of English kings, he was at the least, a good sailor. He knew the country's needs so far as an efficient Navy was concerned, and he did all in his power to put ships, officers and men on a satisfactory basis. Like our present Prince of Wales, he had been Duke of York, and whilst holding that title he had also filled the office of Lord High Admiral. In that capacity he had fought and defeated such giants as Opdam and de Ruyter. At the battle of Lowestoft (1665) he laid his ship, the *Royal Charles*, 80 guns, alongside that of Baron Opdam, the *Endracht*, 84 guns, and was so exposed to the enemy's fire that when three of his staff, the Earl of Falmouth, Lord Muskerry, and Richard Boyles, were killed by one chain shot, his clothes were bespattered with their blood—indeed, Pepys states that the Duke was knocked down by Boyles' head, which was struck off by the shot. Shortly after this gruesome event, the magazine of the *Endracht* blew up, and with her perished the Admiral and over 500 men, only five of all her crew being saved. The fight was then maintained with great determination by Captain Van Tromp, son of the renowned Admiral of that name, who gave the English seamen such a busy time of it in the days of Blake; but as night drew on he was constrained to fly for safety to the shoals of

the Dutch coast, leaving the English indisputable victors. In this battle the English lost only one ship and 250 men, whilst the Dutch losses amounted to no less than 32 sail, 4,000 of all ranks killed, and 2,063 prisoners, amongst the last being sixteen captains.

Glorious though this victory was, there can be little doubt that the Duke of York did not carry it to its ultimate conclusion. If he had followed up the retreating Dutchmen, he might have entirely destroyed the remainder of their fleet, thereby making himself absolute master of the seas. As it was, the remnant of the defeated Dutch navy was allowed to find its way back to Holland unmolested, where it refitted and came out in the two following years to cause us much trouble in the Downs, and even in nearer home waters.

An officer who contributed very largely to this victory off Lowestoft was Admiral

ADMIRAL MONTAGUE, FIRST EARL OF SANDWICH.

Montague, Earl of Sandwich, in command of the Blue Squadron. Early in the battle he carried his ships clean through the centre of the Dutch fleet, cutting it into two parts and throwing the whole into confusion, thus making the first step towards victory.

Montague, who, at this time, was forty years of age, had seen a considerable amount of service by both sea and land. At the age of 18 he received a commission from Parliament to raise a regiment in Cambridgeshire, which he led with considerable distinction in the following year at the battle of Marston Moor. Before he was 30 years of age, he was joined with Desborough in filling the important office of Lord High Admiral of England.

Never of the extreme party of the Commonwealth, on the death of Oliver Cromwell, his moderate principles induced him to wish the re-establishment of the exiled King, and he soon became one of the principal agents of the Restoration by his influence in the fleet, for which important service Charles II. created him Earl of Sandwich.

Sandwich was also associated with the Duke of York in 1672 at the battle of Solebay—or, as it is now called, Southwold Bay, the well-known seaside resort on the Suffolk coast—and in this encounter he met his death under peculiarly sad circumstances. The English fleet was lying in the Bay, keeping up a protracted jollification in celebration of May the 29th, when, amidst the festivity, the Earl of Sandwich suddenly remarked that there was some fear of the fleet being surprised by the Dutch, and advised that they should weigh anchor and put to sea. In reply to this timely warning, the Duke of York made some remark which caused the Earl intense aggravation, by implying that there was more of caution than courage in his apprehensions. About daybreak, however, as though to verify the Earl's warning, came a sudden alarm that the Dutch were in sight, and the fleet put out to meet them in a confusion which bordered upon panic, for, if surprised in the Bay, the fireships of the enemy might have caused the destruction of every vessel there.

Leading the van, with the ribbon of the Garter above his buff coat, the Earl of Sandwich was the first to take his ships out of the Bay, which had so nearly proved a death trap.

The impetuous valour of the Earl carried him into the midst of the enemy, where, though indifferently supported by many of the ships under his command, he, almost alone, dealt terrible destruction to the enemy. He killed Admiral Van Ghent, and beat off his ship; he destroyed another large ship which endeavoured to board him, sunk three fire-ships as they were approaching to grapple with his rigging; and, though six hundred of his men were killed, and his ship dreadfully shattered by the shot of the enemy, he never slackened the fury of his fire upon all who assailed him. At length a fourth fire-ship ran aboard on the quarter of his crippled ship, and set it in flames. Sir Edward Haddock, his captain, who was almost the only officer that survived, entreated the Earl to abandon the vessel, and consult his own safety by taking to the boat; but in vain. He remained on board till almost surrounded by flames, then plunging into the sea, he perished.

After the battle, the Earl's body was seen floating on the water, and was picked up by the crew of a bomb ketch. The body, so terribly mangled and scorched as to be only recognizable by the George, or Badge of the Order of the Garter, which Sandwich had put on before going into action, was taken out of the sea, embalmed, and carried to London for burial with great pomp in Henry VII.'s Chapel, in Westminster Abbey.

The battle of Solebay, which was claimed as a victory by both the English and the Dutch, but which may more justly be described as a drawn battle, was the last naval engagement in which the Duke of York took an active part. Not long after this fight, he resigned his post of Lord High Admiral for political reasons, but he still retained his love for the sea. When, on the death of his brother, Charles II., he succeeded to the throne, one of his first acts was to appoint a commission, under the guidance of Pepys, the famous Diarist and Naval Secretary, with a view to remedying the many injustices which existed in the Fleet, and to putting the whole matter of Naval administration on a more satisfactory footing than it had

SIR GEORGE ROOKE.

ever been before. This body sat to better purpose than is the rule with Royal Commissions nowadays. As a result of its recommendations, the King was soon furnished with a Navy as numerous, and in every way as complete and well founded as England had ever seen; the officers whose pay had been drifting shamefully into arrears, were now paid to a farthing, dockyards and storehouses were put in order, and a large reserve of stores laid in; and all this was effected, through the abolition of abuses and wasteful methods, with a saving to the public of a considerable sum of money.

But by a grim irony of fate, all these elaborate preparations of James II. were subsequently to be used against him, and to bring about his downfall. Although, as Duke of York, he had shewn himself to be a skilful and intrepid commander, and, as King, an able Naval administrator, yet in the conduct of general affairs he was soon found to be steering the ship of State to destruction; and it was not long before many of the officers who had served under

him in the Navy were compelled, in the interests of their religion and their country, to take arms against him. Foremost among these were Rooke and Byng. The scope of a brief magazine article does not admit of anything like an adequate account of the

BYNG LORD TORRINGTON.

achievements of these two great Admirals, so diverse in character yet so like in the single-mindedness of their aims, but their peculiar connection with James II. as sailor king, at first serving under him and afterwards against him, calls at least for passing notice. Both Rooke and Byng entered the Navy in their boyhood as Volunteers. At the age of 22 Byng was within an ace of losing his life in a sharp encounter with an Asiatic pirate in the East Indies. He was ordered to board the enemy, who was making a most desperate struggle, with himself severely wounded and most of his men killed. Soon after boarding, the pirate ship sank, and Byng was cast into the sea, whence he was taken sometime after by his own men, more dead than alive.

At the Revolution, Byng was instrumental in bringing over to this country James II.'s son-in-law, the Prince of Orange, afterwards William III. of England; whilst Rooke rendered that monarch most valuable service by convoying the Army of his General, the Duke of Schomberg, to Ireland, whither James had fled and gathered together a force with which he made a vain effort to retain his crown.

Rooke and Byng were next associated, at the Battle of Beachy Head an encounter in which the English and Dutch, whom the whirligig of international politics had now converted from our foes to our allies, were pitted against the French, under Tourville. In this encounter the Allied Navies, who were out-numbered and out-manœuvered, sustained a severe defeat; and it is more pleasing to turn to the action off Cape Barfleur, which, culminating in the Battle of La Hogue, once again restored the glory of the British Navy, and dealt a death blow to the hopes of fugitive James, and frustrated Louis XIV.'s designs upon England.

James, it will be remembered, had now been driven out of Ireland by William III.'s forces, and had found a refuge in France, where he assisted Louis in the work of preparing an army for the invasion of England.

The English fell in with the French fleet, equipped and despatched with this object in view, off Cape Barfleur, and after a stubborn fight, compelled them to fly in disorder. The Frenchmen fled in two directions, one section steering through the race of Alderney and running ashore at Cherbourg, where their vessels were burnt by their pursuers; the other ran into the Bay of La Hogue, where the water was too shallow for the English ships to follow. Rooke thereupon manned the boats, and, running in under a terrific fire from two platforms of artillery formed for the protection of the Bay, sunk and burnt 13 line-of-battle ships and nearly the whole of the transport vessels intended for the conveyance of the grand army for the invasion of England. As the English seamen swarmed up the vessels on one side, the Frenchmen fled in panic by the other; and James, watching them from the shore, where the French army

was assembled for embarkation, could not disguise his admiration of the magnificent courage and daring of the English sailors.

But James never came either into contact or conflict with English seamen again; and it is sad to reflect that a King who, at one time, did so much for the welfare of the British Navy, should in all other respects have proved himself so little deserving of the country's gratitude.

Whilst the Battle of La Hogue brought about James II.'s complete downfall, it was but little more than the beginning of the glorious careers of Rooke and Byng, who, in a later reign, were to be associated in such victories as Vigo and Malaga, and above all, in the taking of Gibraltar—a heritage which remains to us to the present day.

Sir George Rooke, who had received the honour of Knighthood in consideration of his services at La Hogue, passed away within a very short time of his retirement from the sea at the comparatively early age of 57; whilst Byng, who was raised to the peerage with the title of Viscount Torrington, had all but completed his three score years and ten when he died in harness as First Lord Commissioner of the Admiralty.

YE MARINERS OF ENGLAND.

Ye mariners of England,
That guard our native seas;
Whose flag has braved a thousand years
The battle and the breeze!
Your glorious standard launch again
To match another foe;
And sweep through the deep,
While the stormy winds do blow;
While the battle rages loud and long,
And the stormy winds do blow!

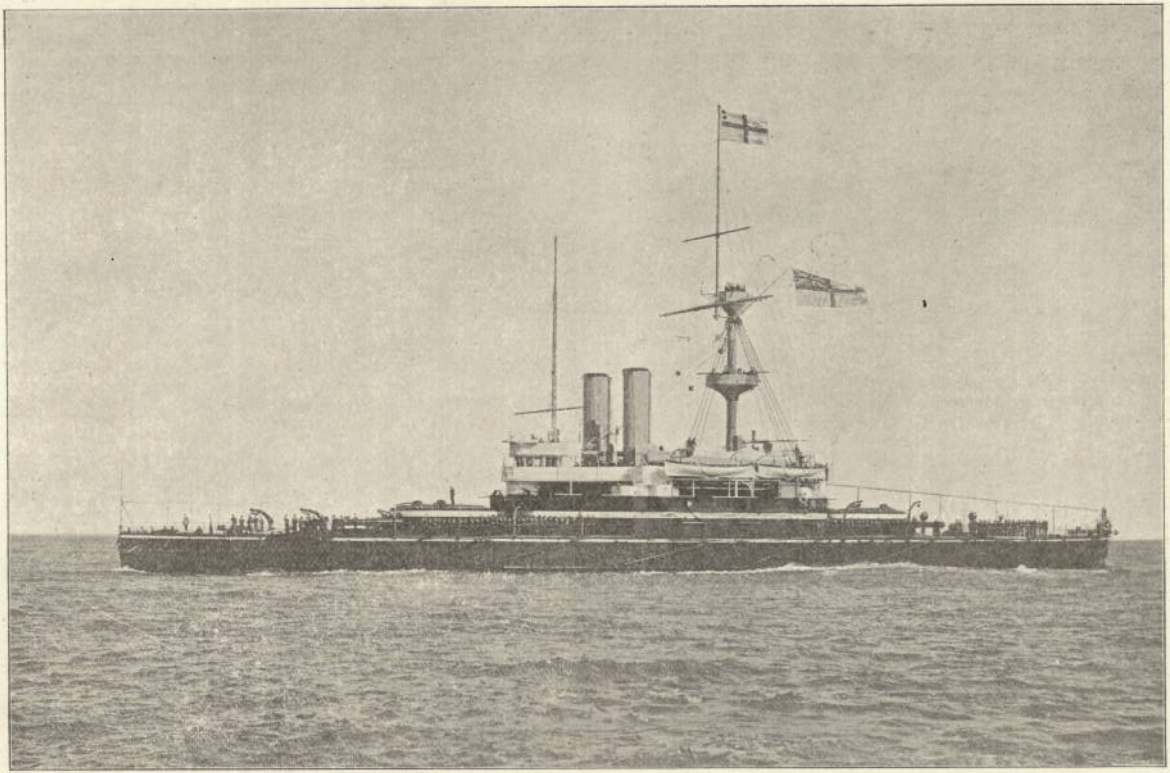
* * *

The spirits of your fathers
Shall start from every wave;
For the deck it was their field of fame
And Ocean was their grave:
Where Blake and mighty Nelson fell,
Your manly hearts shall glow,
As ye sweep through the deep,
While the stormy winds do blow;
While the battle rages loud and long,
And the stormy winds do blow!

Britannia needs no bulwarks,
No towers along the steep;
Her march is o'er the mountain wave,
Her home is on the deep.
With thunders from the native oak
She quells the floods below,
As they roar on the shore,
When the stormy winds do blow;
When the battle rages loud and long,
And the stormy winds do blow!

* * *

The meteor flag of England
Shall yet terrific burn,
Till danger's troubled night depart,
And the star of peace return;
Then, then, ye ocean warriors,
Our song and feast shall flow
To the fame of your name,
When the storm has ceased to blow;
When the fiery fight is heard no more,
And the storm has ceased to blow.



H.M.S TRAFALGAR.

COURTHOPES' COUSIN

The Story of an Abduction and a Rescue.

By WALTER RICHARDS,

Author of "Her Majesty's Army," "Warriors of Britain," Etc., etc.

Chapter I.

"HERE'S the pool, Stacey, and here's the stage I got Phelps to rig up for me. Capital, isn't it?"

"Yes, it looks safe enough. But it goes against my conscience, youngster, to let you go on fishing with a worm instead of learning to throw a fly."

"Well, after to-day you shall teach me. But the gentleman I told you I met here once or twice said there was plenty of time for that."

"More shame for him," said Stacey, who was an ardent sportsman of the orthodox type. "What sort of a chap was he, Tim?"

"Well," answered young Courthope, reflectively, "he was a pleasant-spoken fellow, seemed about thirty. He said he was a painter; gave me some prime fruit, and asked a lot about me and 'the reverend' and all that."

"And you told him?"

"Of course; he was awfully kind and nice. Perhaps he'll be here; he asked me if I was sure to come."

"All right; sing out to me if he does. I shall read till the sun's gone down a bit."

And with these words Stacey, a well-knit, good-looking fellow about eighteen, settled himself comfortably on a luxurious seat of bracken, while "Tiny Tim," as young Courthope was generally called, got together what Stacey stigmatized as his "poaching apparatus," and clambered down to the improvised stage he had got the village carpenter to make overhanging a deep, fishy-looking pool.

The friends were two of some eight or ten boys of all ages who were being "coached" or tutored by Dr. Sterne, who finding himself with plenty of spare time in his quiet Somerset rectory put his rare scholarship to profitable use in this way. Little Courthope was a general favourite, partly because he was the youngest, and partly because he was an orphan—though sometimes the fellows said that even this combination scarcely warranted the excessive care the Doctor took of him.

"Wonder who this chap is the Tiny One has picked up?" soliloquised Stacey lazily; "amiable strangers of artistic tastes are rather a rarity in Droverton. I should like to—Hulloa! who's that I wonder!" springing up and looking towards a cluster of dark tors at a little distance. "Pshaw! there's no one after all, though I certainly thought——"

At that moment there came a sudden sound of breaking wood—an agonized cry, "Stacey! Help!" then a heavy splash cutting short a despairing shriek.

Like lightening Stacey flew to the brink of the sloping gorge at the foot of which was the river. *The stage was gone!* In its place were splintered beams and a hanging plank, and in the black swirling water beneath a few pieces of jagged wood eddied and jostled in the current.

"Merciful Heaven! Tim! Tim!"

Even as he called, Stacey had thrown off his shoes and coat and was swinging himself down to the overhanging ledge on which the treacherous platform had been reared. Reaching it, he paused a moment to scan with agonized anxiety the gloomy water, and to his delight

caught sight of an arm and pale little face come to the surface.

"Cheer up, Tiny; I'm coming," he called on the chance that the lad was conscious, and then, taking his chance of striking the wreckage, he took a header into the pool.

The next minute he was scrambling up the bank with Tim, gasping, but more frightened than seriously hurt, on his arm.

"However did you manage *that* performance, youngster?" asked Stacey, when, thanks to the warm sun and vigorous chafing and rubbing, Courthope was himself again.

"Can't make out. The thing just *went*: Phelps must have been awfully careless."

"I'll go and have a look and give the old idiot a bit of my mind when I get back. You stay here and bask: no more fishing for you to-day, Tim; you've frightened all the fish into the next parish."

Stacey climbed back to the rock and examined it closely. As he did so his face grew very grave with an expression in which was some terror and more anger.

"Foul play! Good Heavens! — foul play!" he exclaimed under his breath.

The supports of the stage had been deliberately sawn through!

* * *

Chapter II.

Owing to the Doctor's absence it was not till the following afternoon that Stacey was able to tell him of his discovery. As he expected, old Phelps had completely exonerated himself in the matter.

"This is terrible," said Dr. Sterne, as Stacey finished his narration. "terrible. I have sometimes feared, and yet—it is too awful to credit. Still——" Then seeing the surprise on the young man's face he added:

"I think I can trust your prudence, Stacey, and if you know the facts you will be better able to assist me. The story sounds like the plot of some trashy novel —would to Heaven it were! You and the other pupils have wondered sometimes, I know, at my anxiety about little Courthope. You will wonder no more when I tell you he is the heir to an extremely large property, and that his cousin, who will inherit it if he dies before he is of age, is one of those unprincipled men, desperate, remorseless, who will stick at nothing to achieve their purpose. These are some of the facts I have ascertained," and taking some papers from his secretaire he shewed Stacey letters he had received from the lawyers and others connected with the property.

"I'm glad to say Courthope's uncle, Sir George Withers, will be in England in a fortnight or so, and my responsibility will be reduced. Meanwhile we must keep a careful eye on him. Where is he now, do you know?"

Stacey smiled and pointed out of the window.

"He's safe enough at present, sir—standing with the other fellows admiring a sort of glorified organ grinder who made his appearance this morning. Clockwork figures and that sort of thing."

"That's all right. You'll bear in mind what I've told you, Stacey. Perhaps, after all, I am disquieting myself unnecessarily, and the accident was the result of some mischievous trick."

Things went on quite placidly for the next few days. Without appearing to do so purposely, Stacey managed to keep Courthope pretty well in his ken, the more easily as the attractions of the "glorified barrel organ" proved an effectual counter-attraction to excursions afield. The proprietors, two swarthy, grinning, white-teethed Italians, evidently found the by-road passing the Doctor's grounds a profitable "turn," for they came regularly, and expatiated glibly in their broken English on the remarkable beauties of their instrument, an elaborate concern, and alike in size, ornament and capabilities quite out of the common. Courthope was especially fascinated, and both from his "Timship"—an expression coined to describe his recognised position of pet and plaything and claims thereto—and from the fact that he was uncommonly well supplied with pocket money and singularly open-handed with the same, was evidently regarded by the Italians as patron in chief and treated accordingly.

Everything seemed so quiet that the Doctor and Stacey began to think that the former's hopeful surmise was correct, and that they were disquieting themselves unnecessarily. But they were destined to be speedily undeceived.

One evening there was the usual gathering of the boys round the organ, which, in some unexplained manner, was, its owners

asserted, to develop fresh marvels in the automatic line, and Stacey strolled towards the group, foremost amongst which was, as usual, his Timship. As it was getting dusk the clockwork figures were lighted up, and certainly made an attractive display. Suddenly from the little copse which bordered the play meadow came the report of a pistol shot followed by another, and a loud cry. Here was an attraction which to the elder boys quite eclipsed the organ and all its works! Murder, perhaps—robbery—possibly by some delightful chance a modern highwayman. Anyhow it was in their copse, and with a general "Come on, you fellows," they dashed off headed by Stacey. Alas for vain illusions! Instead of ferocious villain or romantic desperado they found a wretched specimen of humanity half drunk and more than half idiotic who mumbled some incoherent rubbish about lions and tigers, tried to shake hands with them all round, presented his rusty old pistol with maudlin earnestness to Stacey, whom he begged to keep it "in remembrance of a poor old soldier," and finally sat—or rather tumbled down—and went to sleep.

With their hopes of something exciting cruelly blighted, the boys returned to the tamer joys of the glorified organ.

"Hulloh! where's Tim?" cried someone.

Tim had disappeared.

"Run and see if he's in the house, Rolt," said Stacey, with an uncomfortable, sick sort of fear beginning to make itself felt in his breast.

"Courthope!" "Tim!" "Tiny!" were shouted vigorously and impartially, but with no result, and presently Rolt came panting back to say he had not been up to the house.

"Ees it the leetle signior, yees?" asked one of the Italians, who had been interested observers of the excitement.

"Yes," answered Stacey quickly. "Do you know where he went?"

The man nodded and shewed his teeth as usual.

"Yees; little signior 'e speak to one grand gentleman just when gun shot."

"Well?" gasped Stacey.

"Then grand gentleman take leetle signior into ees—ees what you call? eh, cospetto! into ees coach and drive off *presti*."

"Which way?" asked Stacey, huskily.

"By there," answered the man, pointing along the road past the rectory. "Leetle signior 'e seemed frightened, but gentleman 'e speak much amiably."

Stacey groaned, as he dismissed the men with a tip, and hurried to see the Doctor. What they had feared and striven to guard against had happened. Without doubt Courthope had been abducted by his cousin.

* * *

Chapter III.

There is no need to dwell upon the consternation and activity that ensued. The Doctor rode off to the nearest Constabulary office; Stacey, on a hastily-borrowed horse, galloped along the road to ——, the direction indicated as that taken by the trap; the tutor and some of the elder boys searched the neighbourhood and questioned the villagers. But all with no result. The drunken trespasser had disappeared; as to the trap it melted into thin air for all that Stacey could hear about it. The answers to his enquiries were invariably the same—no vehicle of any sort had been noticed between the rectory and ——.

As Stacey rode back, beside himself with grief and vexation, he found himself wishing a dozen times that he were possessed of the marvellous detective genius of Sherlock Holmes, of Mr. Bryce, or of Poe's M. Dupui. Suddenly, as his thoughts dwelt upon the triumphs of the last-named, an idea flashed through his mind and made the blood flush into his cheeks and his heart commence beating furiously.

"By Jove, I'll try it!" he exclaimed.

Stacey was intended for the Army, and his father, an old Indian officer, who made pistol shooting into a hobby, had stipulated with the Doctor that the boy should be allowed to keep up his practice, his proficiency in which had already gained him a goodly array of "pots" from various shooting clubs. The Doctor had made no objection, merely stipulating that when not in use the revolver should be domiciled in his own study.

Before starting out this afternoon Stacey, with a hazy, half shamefaced idea that it was a stupid, theatrical thing to do, had slipped the weapon into his pocket. He now took it out and saw that it was charged, and then giving his horse the rein he dashed back at full speed, past the rectory, and in the direction *opposite* to that of ——.

It was scarcely dark, but he rode

swiftly on, only stopping from time to time to put a question to people he met. Presently he arrived at a village, once the seat of a small mining industry, and which had a somewhat questionable reputation for the character of its denizens.

Outside one of the cottages a man was lounging in his shirt sleeves.

"Are there a couple of Italians with a big organ staying here?" asked Stacey.

"Rekkon there be, young zur—voreign toads, I calls them."

"Where are they?"

"Varmer Heard, he've let them a shed, out of the way like. You can zee it yonder," pointing to an isolated barn on the outskirts of the village. "They coom by a while ago zeeming mighty merry. Voreign toads, I zays."

"You're about right in this case I fancy," said Stacey, with a short laugh. "Thanks, my friend," and the next minute he was urging his horse towards the shed, the dim outline of which was just visible in the dusk.

Twenty yards or so before he reached it he fastened his horse to a gate, and then approached cautiously. There was a light within, and he could hear sounds of coarse laughter, exclamations which sounded like oaths—and one that brought a fierce execration to his own lips.

Putting his shoulder to the door and exerting his full strength, he burst it open and sprang in.

There, in a corner, his hands and feet tied, across his pale little cheek the weal of a cruel blow, his blue eyes dazed and wide with fright, lay Courthope, and near him stood the "glorified organ," *its back removed showing the hollow space into which the hastily chloroformed boy had been thrust.*

"Stacey!"

"Cospetto!"

"You infernal scoundrels!"

The three exclamations came simultaneously. Then, as Stacey sprang to the boy's side, one of the men drew a murderous-looking knife and the other caught up a rusty spade, and with stealthy movements they began to advance towards him—only to spring back with almost ludicrous celerity at the sight of the gleaming pistol barrel which confronted them. But they were not to be so easily beaten. The man with the spade dropped his clumsy weapon and, seizing a wooden chair, poised it to throw at Stacey, while his comrade should rush in and settle matters with the knife. It was a "tight corner," and Stacey was just deciding that he had better anticipate the attack by a bullet, when the villains were seized from behind, and the Doctor, the Constable, and Stacey's shirt-sleeved friend appeared on the scene.

* * * * *

"The inspector tells me those scoundrels have confessed," said Dr. Sterne when they were once more back at the rectory, and Tiny Tim, after having received an ovation which nearly made him cry, had been put to bed with a sleeping draught.

"It was an infamous, dastardly plot on the part of Courthope's cousin, who bribed these men and provided them with the organ, which he had had specially constructed. Fortunately he's not likely to escape."

"It was jolly lucky for me you turned up when you did, Sir. How did you know where I'd gone?"

"Well, when I saw you riding by like the spectral horseman himself, I thought you'd hit upon something and followed you with Giles. Our friend in the shirt sleeves put us on your track and volunteered his assistance. You've done splendidly, Stacey, splendidly. But how on earth did you hit upon the idea of following the Italians?"

Stacey laughed.

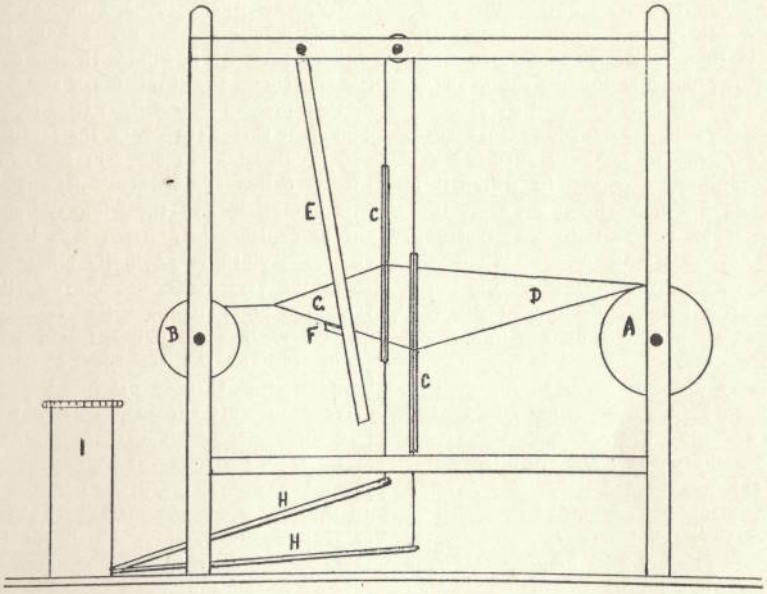
"It was all due to Edgar Allen Poe, Sir. You remember his 'purloined letter?' In order to effect his *coup* Dupui employs a drunken fellow to attract general attention by firing off a gun. I suddenly remembered that, and then the whole thing seemed plain. It was a lucky shot."

It was, and Sir George Withers and Tiny Tim himself took very good care that Stacey should have ample cause to think so. As the former often said:

"Thanks to that 'lucky shot' of yours, my boy, thank Heaven we've seen the last of Courthope's cousin."

A PIECE OF LINEN.

By HENRY EDWARDS.



A SIMPLE HAND LOOM.

A. Beam.	D. The Warp.	G. The Shed.
B. Roller for finished material.	E. The Batten.	H H. Treadles.
C C. Healds or Heddles.	F. Shuttle Slide.	I. Weaver's Seat.

THE name of the material we call linen is derived from the word "linum" which is the Latin equivalent of our "flax," the the plant from which linen is made. The process of manufacture of a piece of linen is one of the most interesting of industrial processes, and is well worthy of attention, especially as, when it is thoroughly understood, the other textile industries are comparatively easy to follow, namely, the making of calico, cloth, carpets, etc.

The history of linen commences when the seed of the flax is sown, in March. By July the flax field presents a very pretty sight, being a sheet of pale blue flowers on the top of slender stalks two and a half to three feet high. When the blossom is over, a large globular seed-vessel, from which linseed oil is made, forms in its place, and the flax is then ready to cut. The stem consists of a tube of fibrous rind, and it is from these fibres that linen is made.

Flax is a hardy annual, and is easily grown, and between the linen and oil produced from it, ought to be more extensively cultivated in this country than it is.

The next step is to separate the fibres of the flax from the woody part of the stem, and this is difficult to do, as they are firmly connected by a kind of resin. It is necessary in some way to melt out this resin, without injuring the fibres. The plan adopted used to be to soak the stems in water for nearly a week, but now there is a quicker way of doing it, by boiling in caustic soda, or lime, which only requires six or seven hours. When this is done the flax is thoroughly dried,

and then beaten to break up the woody part, and then it is ready for the "heckling" mill. This is a machine which has a large cylinder armed with sharp teeth, which tear the fibres apart, and pull out all the waste matter, leaving only a fine soft down, which is made up of long fibres. These are then drawn out into a flat band, the lengths of fibre being overlapped so as to form a continuous strip, which is then doubled and drawn again. When this process is finished the *drawing*, as it is called, is taken to another machine which draws it into a round soft cord, called a *roving*, which in its turn is taken to the spinning machine, in which it is drawn out still finer, and at the same time twisted, which makes it firm and strong, instead of soft and loose. When the threads leave the spinning machine they are in long lengths each wound on a separate bobbin, and they are now ready for the weaver.

In every piece of linen there are two sets of threads, those which run in the length are called the *warp*, and those that cross them are the *weft*. Now the first thing the weaver has to do is to wind a large number of threads, as many as he requires to make the warp of his work, evenly on to a beam, or long roller. This is generally done by a machine, which winds the threads from the bobbins onto the beam much more evenly than would be possible by hand. In the sketch at the commencement of this article A is the beam, or roller, D is the warp, and B is the roller on to which the cloth is rolled when woven.

Now on its way from roller A to roller B the warp passed through two "healds," or "heddles," C.C, which are simply two wooden frames with a number of upright strings fastened to them, in the middle of every one of which there is a loop or eye. There are as many strings on the two healds as there are threads in the warp, and every alternate thread is passed through the eye of a string on one heald and the next one through the eye of a string on the other heald. These healds are connected by cords at each end which pass over pulleys at the top of the frame of the loom, and are also connected by cords to two treadles H.H. Now when one treadle is pressed down by the weaver's foot, one heald will be depressed, and the other one proportionately raised, and with them the alternate threads of the warp will be raised and lowered, respectively.

The weaver seated on the stool marked I, puts his foot on one of the treadles H.H, and thus separates the alternate threads of the warp, forming an opening, G, called "the shed," through which he will next proceed to throw the shuttle, a boat-shaped instrument, like that used in lock-stitch sewing machines, from a bobbin inside which a thread is flowing. Having caught the shuttle on the other side of the "shed," he then presses on the other treadle, which causes the threads to reverse their positions, and in crossing, to close in the shuttle-thread, called the "weft." By repeating this operation, and throwing the shuttle through alternately from the left and right, the cloth is gradually made, but it would be very loose and uneven without the aid of an appliance called the batten, or beater, E, a swinging frame with a comb attached, the teeth of which pass between the threads of the warp, and drive each weft thread up close to the last when swung. The closeness of the material is to some extent dependent on the amount of swing given to the batten. Just below the comb on the batten is a ledge, or shelf, F, on to which the lower threads of the warp descend, and along this shelf the shuttle slides, being generally started from either end out of a kind of box which is jerked by a strap attached to a handle, held in the weaver's right hand, which has the appearance of a whip with two lashes.

These are the essential parts of the simplest form of hand loom, from which have been developed all the wonderful machines now employed in the weaving industry.

The first improvement to be made was to increase the number of healds, by means of which it was made possible to weave simple patterns, such as diagonals and checks. Then an automatic apparatus for throwing the shuttle was devised, after which it was a comparatively simple matter to apply steam, or any other power, to do all the work, namely, to press the treadles, throw the shuttle, and swing the batten. This machine was called the "Power Loom," and its effect on the development of the industry was most marked, as it could turn out such a greatly increased amount of work, and, being absolutely automatic, would weave a whole piece without attention, unless a

thread happened to break. The only manual work required on the Power Loom is in the "mounting," or setting the threads and getting it fairly started.

But even this machine could not weave anything in the shape of a pattern, except such as consisted of plain straight lines.

To a Frenchman of the name of Jacquard, born in Lyons in 1750, must be attributed the invention of the wonderful apparatus which makes it possible to weave any pattern, however complex, and in any number of colours. His apparatus is in use to this day, with very little alteration, and weaves all the beautiful damask table cloths, carpets, and all figured materials in which the pattern is woven. His invention was so little appreciated by his fellow citizens that they broke up his machine and persecuted him, but their descendants, having found out the value of the apparatus, and being ashamed of the treatment the inventor had received at the hands of their ancestors, decreed a public act of reparation, which took the form of a picture woven in silk by the Jacquard apparatus, and representing the inventor in his workshop, surrounded by his tools. This picture contained no less than 1,000 threads to each square inch.

Jacquard realised that no real pattern could be woven as long as a number of threads in the warp were controlled by one heald, so he set about to devise a way by which each thread could be controlled independently of any other. For this purpose he separated all the upright strings forming the healds, and attached a wire to the top of each, ending in a hook. These wires he collected into a square box at the top of the loom, and places them in rows. Each wire passed through a loop in a cross wire, one end of which was connected to a small spring, and the other projecting through the side of the box. In front of each row of hooks was a metal bar, which was connected to the treadle, so that it rose six or eight inches when the treadle was pressed, and just missed the hooks. Now by pressing the projecting point of one of the cross wires, one of the hooks could be pushed forward so as to engage with the metal bar when it rose, and thus lift one thread of the warp above the shuttle. A pattern could therefore be formed by pressing in certain of the wires, and not others. This was accomplished by means of a square block of wood, with a hole drilled in each of its four sides to admit the point of each of the projecting wires. This block being pressed against the projecting points, no effect was produced, but if a piece of card was placed between the block and the points, all the wires would be pressed in unless holes were made to allow certain of the wires to pass through the card into the holes in the block. Thus by perforating a series of cards, and stringing them together, so that they would follow one another through the machine, any desired pattern was produced. Patterns have been woven requiring as many as 24,000 cards each large enough to admit of 1,000 perforations.

All this sounds rather complicated, and so it is, but if any reader is sufficiently interested in the subject from this brief sketch, he is advised to take the first opportunity of seeing the exhibits in the Machinery Department of the South Kensington Museum, which include a complete model Jacquard Loom, and a full size Jacquard apparatus, as well as hand and power looms. There is also a very interesting Jacquard Loom to be seen at work in the Crystal Palace, weaving pictures in several colours. The colours are controlled by a special row of perforations on the cards.

ANECDOTES.

No theory, but——

A Welsh mansion having been burgled one night, the village constable, a raw young recruit from the hills, was sent for. The squire personally conducted him over the scene of the midnight marauder's operations.

"Well, Evans," said he, "have you any theory that will enable you to effect an arrest?"

"No, surr," replied Evans, "I 'aven't got no theory so farr, 'cos the thiefs wass too cute to leave wan behind; but I 'ave got a splendid idea who did done it."

* * *

Just where the difference was.

"Did you see this tree that has been mentioned by the roadside?" an advocate inquired.

"Yes, sir, I saw it very plainly."

"It was conspicuous, then?"

The witness seemed puzzled by the new word. He repeated his former assertion.

"What is the difference," sneered the lawyer, "between plain and conspicuous?"

The witness looked as calm as ever, then replied:

"I can see you plainly, sir, amongst the other lawyers, though you are not a bit conspicuous!"

* * *

Encouraging.

Some years ago a party of Cambridge professors undertook to penetrate into the depths of a Cornish mine. The lowering apparatus was merely the primitive rope and bucket. When they had finished their explorations they were hauled up in this bucket two at a time.

As the last was slowly ascending, with a miner as fellow-passenger, he perceived, as he thought, certain unmistakable symptoms of frailty in the rope.

"How often do you change your ropes, my good man?" he inquired, when about half-way from the bottom of the awful abyss.

"We change them every three months, sir," replied the man in the bucket; "and we shall change this one morrow, if we get up safe!"

As before.

In a Sheffield workshop, when the men absented themselves they were expected to produce a doctor's certificate.

An Irishman, absent, however, on a second occasion, and told to bring his certificate, gave in the one used before. The manager, looking at it, said:

"Why, Maguire, this is an old certificate!"

"Sure I know that, your honour," said Maguire, calmly. "And isn't it the same ould complaint?"

* * *

One for nothing.

An Irishman once went into a grocer's shop and asked the grocer the price of eggs.

"Seven for sixpence," said the grocer. "Best new-laid, too."

"Oh," said Pat, "seven for sixpence. That's six for fivepence, and five for fourpence, and four for threepence, and three for twopence, and two for a penny and one for nothing, so I'll take the one for nothing, please."

* * *

Once bit, twice shy.

Edward was taken by his mamma to the photographer's the other day. She was anxious to secure a good likeness at this particular sitting, because she wished to distribute the pictures among some friends who were then her guests.

The child's idea of the affair, however, did not apparently harmonise with that of his mother, for when the man with the camera began to adjust the lens and direct it towards little Edward, that young person set up what was unquestionably a howl.

In vain did the mother exhaust argument and entreaty. Edward did not want his picture taken.

"Why, my child," she said soothingly, "the gentleman won't hurt you. Just smile and keep still a moment, and it will be all over before you know it."

"Yes, I know, mamma," whimpered the youth, with the tears running down his cheeks, "but that's what you told me at the dentist's."