battened down. On the afternoon of the 23rd the wind moderated, although the sea still continued high, but they were able to set the engines on again at full speed. At 7.30 a.m. of the 24th the captain and chief officer were in their berths. It was the second mate's watch on deck when he was at the time below in the cabin, looking after his extinguisher for fear of the fire, opportunity offered, of taking an observation of the sun, when an explosion took place in the after hold. On the captain jumping up and going out of his cabin, he found the whole of the aft deck was on fire, sitting down on the grating just outside the cabin door, very severely burnt, and on hearing that the cook was in the lazarette, steps were immediately taken to get him up, and he was brought on deck also severely burnt.

Finding that there was a great deal of smoke coming up from the lazarette in the stern of the ship, as well as from the officers quarters abaft the engine-room, the master thought it was necessary to bring it to forward and water to be turned on; it about half an hour they succeeded in getting the fire under, so that they were able to go below. On consoling with the chief engineer into the lazarette the master observed that the bulkhead which separated it from the cargo portion of the 'tween decks had been blown out of shape; and what was of much more consequence, that some of the rivets that fastened the plates to the angle iron had been blown away, and that the water was coming into the ship. On looking down into the after peak, which was below the lazarette, he saw further damage, and that the water was also pouring in there. He closed it up after peak in order to prevent the water getting into the ship that way, and proceeded, as well as they could the leaks in the lazarette caused by the vents and plates being given away. The pumps too, of which the vessel had three worked by steam and two by hand, were set to work; but as none of the suction pipes led down into the lazarette, after that was accomplished in order to pump the water out of the after hold, it had to be done upon the engine-room, and for that purpose the sluices were opened. At first they thought that this would take place upon the water, but after a short time it gained upon the vessel. The chief engineer has told us that, not being able to sound the after hold, he knocked out a ribot about 4 feet above the floor; and at that time the water had not risen in the after hold to that point, but that on its shortly afterwards coming through that hole he knocked out, a ribot about 9 feet above the floor, and after a time the water came through that also, showing that it was rising rapidly in the after hold.

Finding, between 11 and 12 o'clock, that all their efforts to keep the water out were useless, and that the lower after hold was quite full of water, a Captain, that the vessel was rapidly settling down astern, the master determined to abandon her. The boats were soon got over the side, and the injured men, viz., the cook, steward, and able seaman, one of the mates, who had also been severely burnt, were first put into them, and then all the hands got in, and proceeded to a steam vessel called the "Nellie Wise," which had very fortunately come up, and were taken on board by her brought to this country.

The opinion of the Captain having been asked as to what was the cause of this casualty, it is in the first place essential for this purpose that we should have a correct knowledge of the form and construction of the vessel. From a drawing made by the chief mate, and which has been laid before us, it appears that the vessel had her engines amidships, with two holds, one before the other abaft the engines, and separated from them by watertight bulkheads. The free and after holds were divided by a deck into upper and lower hold, and there were two hatches to the fore hold, but only one to the after hold. The foremost upper after 'tween decks was divided off from the hold, and formed the engineers and officers berths and mess room. The after part was also partitioned off and formed the lazarette, running back aft to the forecastle of the ship. The officers quarters, as also the lazarette, were separated from the engine-room by two bulkheads, the former being close rebated, whilst the latter was faced with strong boards with interstices of a quarter of an inch between the planks, and had a door in it to enable them to take the provisions down through the after hatch in the lazarette. On the deck was the saloon and captain's cabin, and the only access to the lazarette was through a hatch in the ceiling of the passage leading from aft to the saloon, and placed within a foot or two of the outer door. Under the lazarette was

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as I have said, a watertight compartment, which the cap-
tain referred to after past.
From the evidence of the foreman coal trimmer and of one of his men, who has been a trimmer before us, it would seem that the lower holds were full of coal, the fore-
tween decks was also pretty full, but in the after tween
decks there were big bunks and the trimmers had been-put up against the forward bulwark which separated the cargo space from the officers berths and mess room, and it slopped away aft from the bulwark, filling the hold, thus leaving a large empty space immediately forward of the bulwark of the lazarette. This was done, we are told, by the mate's directions, in order to ease the vessel and not have the re-
visions down through the after hatchway and into the lazarette by the door in the bulwark of which I have spoken.
Now the coal with which this vessel was laden was all South Wales steam coal, supplied by the Ocean Steam Coal Colliery Company, who, as we are told, own about 4,000 acres of this coal. The total quantity put on board as cargo was 1,253 tons, of which about 400 tons were put into the after hold, the remainder being in the fore hold. From a return which was given in by Mr. Riches, the man-
gaging partner of the company, it seems that something like 400 tons of this coal had been brought on the 15th of November and was shipped in the vessel on the 16th; that about 600 tons had been brought on on the 17th and was shipped on the 18th; and that the remaining 400 tons or thereabouts were brought on the 18th and were shipped on the 19th, with the exception of a small quantity which was not shipped until the morning of the 19th. This was in addition to 322 tons of bunker coal, which had been brought on on the 17th and was shipped on the 18th and 19th. All the coal, therefore, which was on board this vessel, was fresh or newly wrought coal, and in a condition to give off large quantities of gas. I may add that according to the coal trimmers the last portion of the shipment, and consequently that which had been last wrought, was placed in the after hold.
Let us now proceed to inquire what means there were of venting off this coal. There never were in the coal holds, there were two ventilating bollards, standing some 2½ to 3 feet above the deck, and the same over the after hold; but in three of them a cap or screw which closed the orifice had been rusted in and could not be moved; the key, too, for unscrewing them had been lost, so that for any purposes of ventilation these so-called ventilating bollards were quite useless, and as a fact they were all closed when the left Penarth and were not opened before the vessel founded. This was the means afforded for ventilating the holds except through the hatchways.
There were also two ventilating cows standing some 7 or 8 feet above the deck, one of which was over and was intended to ventilate the officers berths and mess room; the other was fixed just abaft the saloon and captain's cabins, and was intended for ventilation of the lazarette. This latter, however, became unshipped some time during the working of the ship, and instead of replacing it the master ordered the hole to be plugged up, and from that time there was no ventilation of any kind either from the lazarette, or, as I have already observed, from either of the holds.
It is hardly necessary, after the numerous inquiries which we have had into cases of explosion of coal gas, to enter at any detail into the very dangerous character of the gas which is given off by these coals, or the very serious con-
sequences that may result therefrom, nor should I do so were it not for the real or assumed ignorance which has been shown by the master in this case. From the informa-
tion which has been called for from the Court in previous cases, as well as from the evidence given in this by the managing partner and the manager of the colliery from which the coal came, as well as by Mr. Riches, the experi-
enced inspector of coal mines for the South Wales district, it is one of the most dangerous gases, for which it is so much sought after for steam purposes. It has, as we are told, a tendency to give off gas in large quantities for some time after it is wrought, and when it has been broken up, as it necessarily would be on being thrown down into the hold of a vessel. Now the gas so given off, while it is a very active compound, and the consumption of it is 16 parts of atmospheric air becomes a highly explosive compound, the force of explosion being greatest when mixed in the proportions of 15 parts of coal gas to 1 part of atmospheric air. Another property of this steam coal is that it contains a very small quantity of sulphur. Mr. Jenkins, the manage-
ner of the Ocean Steam Coal Colliery, and an expert, in a report he has made to the Company, states that it is in a state of combination with the incrustation, and in a deck close to which the stew-
ard was immediately after the explosion; it is not very proba-
that the steward was following the cook down with a light when the gas exploded? And this, too, is confirmed by the fact that he was not more severely about the lower part of his legs than elsewhere. The explanation of this is that his legs were already in the hatchway when the explosion took place. The steward, it is true, was told, denies that he had any light with him, but the court has no difficulty in the weighing of evidence in this case. The impression, I would say, is very strong against him. The poor man is still in the hospital, and it is not at all strange that he should think that the court would be cruel if it appeared to him to be at all necessary after the evidence we already have. We have no doubt that the steward had a candle in his hand, and that he was going down when the gas, which had accumulated in the lazerette, exploded.

What we have now, therefore, to consider is, who is responsible for this casuistry? It was said by Mr. Stephens, who has appeared for the master, that little, if any, blame rests with the master for not having seen that proper means of ventilation were provided for this vessel; that the principal responsibility for the omission would rest with the owners. Whatever any responsibility rests upon the owners, it is, in our opinion, that for themselves, whatever the owners may have done or omitted to do, is not relieved from responsibility. It was the clear opinion of the Merchant Shipping Act 1877 that the master as well as the owner should be held responsible for acts and omissions of dangerous or negligence which may take place. The fourth section declares that the master as well as the owner shall be responsible if he takes an unseaworthy ship to sea, or if he neglects to put the vessel to sea when it is fit to go there, or to load, or to carry cargoes; so also the 24th section, which relates to deck hands of timber; and lastly, the 28th section, which deals with all cases, declares that the master as well as the owner shall be liable for any breach of the statute.

Do you not see, in this case? It seems that there were four ventilating bollards. Did the master say that they were in proper working order? In three of them the caps were broken, and they were not be moved. When we are told, was lost; and all four of them remained closed from the time of leaving port until the vessel founded. And the fact is, the vessel, when the vessel was over the laverette, was unshipped on the evening of the 22nd, the master took no steps to replace it. He said that it was bent, but the engineer told us that it was not broken, that he had no idea of the importance of keeping the hold and those parts of the vessel into which gas might find its way, properly ventilated; otherwise he would most certainly have replaced that ventilating cow as soon as it had been shipped. I do not see how the vessel was all that could have been desired, but it would have been better than nothing, and I think we can think little doubt that had that cow been replaced would have been kept free from gas, and no explosion would have occurred.

To bring the knowledge of the dangerous character of the gas that was leaking out of the hatches, it was attempted to be shown that he had been served with a paper entitled "Explosions of Coal Gas on Board Ship, Official Caution," at the same time that the official log-book was given to him; but the evidence on this point entirely broke down. The notice in question bears date the 22nd of October last, and we are told that copies thereof were received at this port on the 15th November, with directions that it should be given to the master of all vessels leaving this port coal laden; and as the "Richmond" did not leave until the 19th, a copy of this paper should have been given to the master. But although we have had before us three gentlemen from the Mercantile Marine Office in Cardiff, not one of them was able to say whether the master had received a copy of the paper given him. One of them, indeed, told us that he thought that a copy must have been given either to the master himself or to his agent, or to some one or other; which can hardly be said to be conclusive evidence that the captain had had a copy given to him, in time to reach the master as a thing of importance and not seen it before he left. Two of the gentlemen, Mr. Miller and Mr. Baker, told us that on the return of the master to the port, they found that he had been given a copy of the official notice. Mr. Baker, in order, as he said, to make assurance doubly sure, had held up a copy of this notice, and asked the master if he had seen it before he left, and the master said in an offhand way that he knew all about it. It turned out, however, that the master had arrived in Cardiff on Friday the 28th of July, that on Saturday the 30th of July he had been with the collector of customs making his deposition from about 1 to 4 p.m. He told us also that it was on the same day he saw for the first time a copy of "Official Caution," and that it was not until after that that he had the chance to read the notice. Miller and Baker. And it is therefore quite possible that the paper of this paper was held up to him, he may have said that he knew all about it, but he had no paper or copy of it, and it was then furnished with a copy of it before he left. Had this been brought clearly home to the master, the sentence which we are about to pronounce would not have been so lenient an one.

I must not, however, leave this "Official Caution" without calling attention to what I conceive to be a most serious defect in it, and one which, in my opinion, should at once be remedied. In almost all the inquires that have come before me, I have had occasion to remark upon the extraordinary confusion of ideas that seems to prevail in the minds of masters of vessels about the terms "explosions" and "explosive combustion;" a confusion to which attention is especially directed in the Report of the Commissioners on "Spontaneous Combustion of Coal in Ships." The Commissioners say that, "it cannot be too clearly understood that they originate from entirely distinct causes inherent in the coal;" and they urge very strongly the importance of maintaining a clear distinction between them. So distinct in fact are they that they hardly co-exist. Moreover, the vessel was not only vapour, but the vessel has left port, and when the gases are more freely given off, and are allowed to accumulate on the surface. Spontaneous combustion is a process by which the body of the coal, and due to the presence in the coal of iron pyrites, and that the iron pyrites should be strongly impressed on the minds of all who have to do with these coals, I fear that in drawing up this "Official Caution" or notice that指导意见 has not been clearly brought out in mind. The notice is headed "Explosions of Coal Gas on Board Ship," and it might therefore be supposed that the recommendations contained in it, continue would apply to "explosion;" but this is not so, for after quoting some of the judgments pronounced by this Court in cases of explosion, it continues: "The vessel was ventilated, some recommendations, seven in number, all of which, with the exception of one, relate not to explosion of gas at all, but to spontaneous combustion. I observe, too, that it calls the conclusions of the "Royal Commissioners appointed to inquire into explo- sions and spontaneous combustion on board coal-laden ships," when they were the commissioners appointed to inquire simply into spontaneous combustion of coal in ships, and not into explosion on board ship. It is true that the commissioners in one of their reports refer to explo- sions, but only incidentally, and they are most urgent in recommending that the two cases of casuistry, namely, explosion and spontaneous combustion, should be kept perfectly distinct, which it appears to me that this official notice does not do. A notice relating distinctly to explosion of coal gas on board ship," which contains seven recommendations, six of which relate to spontaneous combustion, and one only to explosion, is not yet arrived at a clear conception in the minds of merchant captains of the distinction between the two.

I am the more induced to mention this circumstance, for in the case before us there were two witnesses produced by the Board of Trade, who were pressed to say that this was a case of spontaneous combustion, in other words that it was no one's fault, and that it had arisen from the state of the atmosphere, and from the fact that rain had fallen when the cargo was being shipped, circumstances which had absolutely nothing whatever to do with the explosion in this case.

There is also another point in which, in my opinion, this notice is defective, so far at least as relates to the shipment of coal from Cardiff. The gas explosion occurred on the 17th of September, and is named, that it does not call attention to the fact that the gas given off by the South Wales steam coal is incendiary, owing to the very small quantity of sulphur in the coal. In my opinion, this is a matter of vital importance. I am aware of the cases cited in the evidence in this case, and I do not call it to be the utmost importance that masters of vessels should know that the absence of a smell of gas is not a proof that South Wales steam coal gas is not present and in dangerous quantities.

Another question upon which the opinion of the Court has been asked is, whether the coal was shipped too soon after being wrought? On this I need only say that it
seems to be the invariable practice to ship this coal very soon after it has been wrought, sometimes on the same day. And we see no reason why this should not be done, provided that proper precautions are taken to allow the gas to escape, or, in other words, that the holds, as well as those pieces into which the gas might be likely to find its way, are properly ventilated.

It now only remains for us to say what ought to be done as regards this gentleman's certificate. The Board of Trade have said that they do not press for his punishment, but, considering the number of these cases which are constantly occurring, the real or assumed ignorance of captains on the subject, the serious consequences likely to result from the neglect of proper precautions; seeing, too, that in the present case the master altogether neglected to use the means which were provided for ventilating the hold; that he neglected to replace the ventilating cowl to the lazarette after it had been unshipped; and that he failed to raise the hatches to give ventilation to the holds as soon as we think he might and ought to have done, although he knew that there were no other means of ventilation to the holds. Looking at all the circumstances, and considering that nothing will prevent a recurrence of these casualties, except a knowledge on the part of masters that they will be held responsible, and will be punished if they do not take the necessary precautions to prevent them, we feel that we have no option but to suspend this gentleman's certificate for six months from this day. We shall, however, recommend that during the period of that suspension he be allowed a first mate's certificate, as we have no wish that he should spend those six months in enforced idleness on shore.

(To Mr. Reresby.) You do not ask for costs?

Mr. Reresby.—No, sir.

(Signed) H. C. ROTHERY,
Wreck Commissioner.

We concur.

(Signed) R. ASHMORE POWELL,
Assessor.

"    JOHN S. CASTLE,
Assessor.