DEMOCRITUS AT BELFAST.

(See Report of Professor Tyndall's Inaugural Discourse to the British Association.)

(*From Punch*)

Tyndall, high-perched on Speculation's summit,
May drop his sound-line in Nature's ocean,
But that great deep has depths beyond *his* plummet
The springs of law and life, mind, matter, and motion,

Democritus imagined that the soul
Was made of atoms, spheric, smooth, and fiery;
Plato conceived it as a radient whole—
A heavenly unit baffling man's enquiry.

Indolent Gods, immeasureably bored,
Beyond the blast of Boreas and Eurus,
Too lazy man to punish or reward,
So much was the Heaven conceived by Epicurus.

If, as the wide observant Darwin dreams,
Man be development of the Asidian,
Methinks his great heeds and poetic dreams
Scarce square with his molluscous pre-meridian.

But, even as Milton's demons, problem tossed,
When they had set their Maker at defiance,
Still "found no end, in wandering mazes lost,"
So is it with our modern men of science.

Still in the "Open Sesame" of Law,
Life's master-key professing to deliver,
But meeting with deaf-ear or scorn-clench jaw,
Our question "Doth not law imply law giver?"

Betwixt the Garden and the Portico,
Thou, vacillating *savant*, often flittest,
And when we seek the source of law to know,
Giv'st us a phrase, "survival of the fittest."

Pray who may be the fittest to survive,
The spark of thought for coming time to kindle
The sacred fire of science keep alive?—
Plato, Agassiz, Humboldt, Huxley, Tyndall?

If Tyndall's last word be indeed the last—
Of Hope and Faith hence with each rag and tatter
A black cloud shrouds our future as our past;
Matter, the wise man's God: the Crowd's—no Matter.

TRIAL OF THE SCREW FRIGATE *RALEIGH.*

The unarmored screw frigate *Raleigh*, 22 guns, 4780 tons displacement, 6000 indicated horse power of engines, Captain G. Tryon, C.B., shortened in cable and got up steam in her boilers at Spithead on Tuesday in readiness to enter upon her trial of six hours' continuous steaming at full power, but the trial was deferred owing to the violence of the weather, a hard south westerly gale prevailing in the Channel. It was decided, however, that the trial should be made on the following day, whatever might be the condition of the weather, and cable was therefore shortened again into three shackles on Wednesday morning by breakfast time, and steam was again got up in the boilers in readiness for the day's work. Nixon's steam navigation coal was to be burnt in the furnaces, and as there was considerable delay in receiving the requisite quantity of coal from the shore, it wanted largely half an hour to noon before the *Raleigh* could weigh her anchor to steam out south east from Spithead for the Channel to commence her trial. Consequently it was half an hour after twelve before she could actually begin the six hours' steaming. Captain Waddilove, as the officer in command of the reserve at Portsmouth, had the official conduct of the trial, with Captain Tryon assisted by a staff of naval engineers and superior officers, latter including Mr. Bannister, from the office of the engineer-in-chief at the Admiralty; Mr. Oliver, chief inspector of machinery afloat to the Portsmouth Steam Reserve; Mr. Durston, representing the Factory Department of Portsmouth Dockyard, the Shipwright Department, &c. The wind was strong at 8-force, according to naval code, of about four to five from S.W. to W. When abreast of the Head of Dunnose, at the back of the Isle of Wight, the frigate was started on her three hours' outward steaming on a Westerly South course, bringing the wind nearly right ahead. Returns were made of the work of the engines every half hour; the principal items in which score as follows:—first half hour indicated horse power 6009.84; revolutions of the engines per minute 69 9; mean steam pressure from diagram, 18·75; second half hour indicated horse-power, 5477·11; revolutions of engines per minute 68·92; mean steam pressure, 18·75; third half hour indicated horse power, 5771·58; revolutions of engines per minute 68·10; mean steam pressure, 18 9; fourth half hour indicated horse power, 5675 44; revolutions of engines per minute, 68·53; mean steam pressure, 19 65; fifth half hour indicated horse power, 5833 22; revolutions of engines per minute, 9 03; mean steam pressure, 20·05; sixth half hour indicated horse power, 5657·27; revolutions of engines per minute, 68.·67; mean steam pressure, 19 65. As soon as the outward course had been accomplished by the completion of the sixth half hours' steaming, the ship's course was reversed, and her head laid on the back track for Spithead, the wind and sea being then brought nearly right aft. The homeward steaming finishing the trial was concluded when the frigate had arrived off Sandown Bay, in steaming in from the Channel for Spithead. The results of the six half hours' work homeward were—seventh half hour indicated horse-power, 5649·35; revolution of engines per minute, 69 63; mean steam pressure, 19 24; eighth half-hour indicated horse power, 5862 47; revolutions of engines per minute, 70·43, mean steam pressure, 19·75; ninth half hour indicated horse power, 5877·35; revolutions of engines per minute, 58·8; mean steam pressure, 18·2; tenth half hour indicated horse power, 5219·30; revolutions of engines per minute, 68 06; mean steam pressure, 18 45; eleventh half hour indicated horse power, 5372·17; revolutions of engines per minute, 68 63; mean steam pressure, 18·6; twelfth half hour indicated horse power, 4930·24; revolutions of engines per minute, 67 23; mean steam pressure, 17·4. The results were considered most satisfactory by the officers conducting the trial. In the three hours' steaming soutward and against wind and sea, the common log gave the frigate an average speed of thirteen knots an hour. In steaming back before the wind and sea, the patent log from four to five p. m., gave the ship a speed of 14½ knots per hour, but the figures require verification at the mensured mile. The engines which are from the factory of Messrs Humphreys, Tennant, and Co., of London, worked without a fault throughout the trial. The fires were attended by seven stokers from the Portsmouth Steam Reserve. Rumours, if not exactly disquieting, yet certainly not too favourable, have been in circulation for some time respecting the *Raleigh*, and on the 31st of July last, Captain Bedford Pim, the Conservative member for Gravesend, from his place in the House of Commons, put some questions on the subject to the First Lord of the Admiralty, to which Mr. Hunt replied that the *Raleigh* had received 180 tons of ballast on board without any inconvenience being occasioned by its stowage, and that the frigate possessed the required stability. Changes had been made in her while she was being built, and her armament had been increased very much in weight, and the consequence then was that she drew 16in. more water than she was originally intended to draw, but Mr. Reed was not responsible for any changes made in his design of the ship. Mr. Hunt spoke according to the statements given in by his professional adviser, and pretty correctly described the position of affairs in the *Raleigh* at that time, but Captain Pim's questions were no doubt intended to deal more in detail with the changes made in the design of the frigate while she was building, the cause of the ballasting and the change made in her armament, as well as the precise conditions under which she would eventually go to sea with all her weight on board. It is understood to have been the original intention to place a certain quantity of ballast in the bottom of the ship, but from the increase in the weight of material over the estimated weight during the time she was building, and the increased weight given by the change of her main deck armament from fourteen converted 64-pounder guns of 71cwt. each, for fourteen of the 115-pounder guns of 90cwt. each, the ship was found necessarily deeper in the water than was wished for, and it was decided at the time not to put the ballast on board. Some time afterwards, however, when the frigate was lying in the river, commissioned, between Chatham and Sheerness, she exhibited such unmistakable signs of "crankness" that she was taken into the steam basin at Chatham, and there "inclined" by the Admiralty officials to obtain the exact angles of her stability. These angles, on being subsequently worked out, were found to be not quite so satisfactory as could have been wished. Looking upon the ship simply as a gun platform, the old proposition for ballasting the ship was again resorted to, and some 180 tons, as Mr. Hunt states, were put on board. Now the result of all these alterations and additions of weight put on board has been to give the *Raleigh* as nearly as possible the increased immersion mentioned by Captain Pim. Her draught of water when she got under way from Spithead for her six hours' trial on Wednesday was 21ft. 11in. forward and 24ft 10in aft. A mean draught of 23ft. 4in., with fifty tons weight in water and stores, yet to be taken on board. Her original mean draught, as designed by Mr. Reed, was 21ft. 6in., but Mr. Reed designed the *Raleigh* as an unarmored frigate, to have an exceptional rate of speed, and to carry a few only of the largest armour piercing guns that could be carried and worked on board. Now she undoubtedly is a swift ship, but not so swift as she was intended to be; and instead of a few large armour piercing guns she carries a large number of weak shell guns. With two exceptions only, the *Raleigh* has been tried at the Maplin Sands measured mile for speed, but she was tried at her originally designed draught of of water, it being the engine contractor's trial, a mean of 21ft. 6in., and therefore about 2ft. less than her draught. The trial was made on the 2nd of April last, and a mean speed with full boiler power was attained of 15.503 knots per hour, half boiler power giving her a speed of 13.455 knots per hour. The engines under full boiler power indicated 6157 horse, or 157 horse in excess of the power contracted for. The engines drove a "Hirsch" propellor of two blades after leaving the Medway, and during her passage from the Nore to Spithead this screw became damaged, and has been replaced, at Portsmouth, by another of the same kind, but with greater strength in the two blades near their junctions with the boss.

The present armament of the *Raleigh* is