

purposes of air and exercise, while from its height and form it is expected to afford a dryness and comfort not attainable on the upper deck of any ordinary ship. There are abundant means for ventilating all parts of the ship mechanically, when bad weather oblige "bottling down;" in fact, the "Thunderer," what with steam turret engines, steam steering engines, steam fire engines, and steam ventilating engines, is a good deal like a well-ordered factory inside. Of course this is a grievance to a large school of naval officers, but of course it is inevitable, and any attempt to ignore the fact that the true description of a fighting ship nowadays is a fighting *engine*, can only lead to national disaster. Considering the moderate crew required by this powerful ship—thanks to her mastless state—the accommodation will probably be preferred by the men to that in vessels of the ordinary construction. The boats will stow, in bad weather, on the hurricane deck, and a strong iron mast (not shown in our elevation), fitted with a derrick for hoisting them in and out, will stand just abaft the funnels. This mast will also carry a topmast for signalling, and, we believe, a large top or platform for reconnoitering purposes (like those one sees upon ships in old tapestries, holding men in armour so disproportionately large that the ship seems in imminent danger of capsizing). There is no idea of setting any sail whatever upon it. The anchors are on Martin's principle, and lie flat in recesses or "shoots" cut in the sides of the forecastle, so as to be out of the way of fire. It is considered that the forecastle is high enough for the safety of the men employed upon it under any circumstances in which it can be necessary to weigh, stow, or let go anchors, especially as the capstan is below, and almost the whole of the operation referred to can be conducted from below. The behaviour of the ship against a heavy head sea is, however, admitted to be a matter upon which enlightenment must be gained by experiment. We have little doubt it will prove satisfactory: it not with the present height of forecastle then with greater height, which can easily be given with no greater sacrifice than the surrender of a certain amount of possible depression of the guns of the fore turret.

The hull is built upon Mr. Reed's longitudinal system, by which great strength is secured in the direction in which it is most required, while weight is reduced to a minimum. Assuming, as we have every right to do, that it has not been reduced beyond safe limits, the good effect of the changes introduced by Mr. Reed in the framing of our war ships is made apparent by the comparison in the table at the end, between the weight of the hull, 2,454 tons, and the enormous weight, 5,355 tons, it serves to carry, offering a marked contrast to the earlier ironclads. There is no early ironclad carrying such enormous weights as the "Thunderer," but the nearest approach is the "Minotaur," carrying 5,232 tons. This is done upon a hull weighing 5,043 tons, or more than twice the weight of the hull of the "Thunderer." No doubt the bottom of the "Minotaur" is strong, and the old transverse system of framing has gained some credit from the behaviour of the "Agincourt" upon the Pearl Rock. Yet that very strength might have been her destruction, for had she taken the rock at any speed, instead of drifting so quietly upon it that no one on board knew she had struck, not only would her frames, forced transversely against the rock, have suffered possibly fatal dislocation, but they would almost certainly have anchored her hopelessly upon the rocky points. The "Thunderer," however, which has longitudinals 7 ft. apart, connected by light "bracket frames," intended merely to hold them, and the two bottoms, in position, would have had a good chance, even at considerable speed, of merely skating along the rock upon the edges of the longitudinals while the outer bottom between them would yield to almost any extent by the buckling or breaking of the bracket frames, without necessary damage to the inner skin. The bottom would be furrowed lengthways instead of crossways, and the work of getting off would be infinitely more easy.

The following are the principal dimensions of the Thunderer:

Length between perpendiculars .....	285	0
" of keel for tonnage .....	246	32
Breadth extreme .....	62	3
" for tonnage .....	58	0
Depth in hold .....	18	0
Burthen .....	4400	tons.
Displacement .....	9117	"
Area of midship section .....	1454	sq. ft.
	ft.	in.
Draught of water, forward .....	25	9
" " aft .....	26	6
Height of port from load water line, fore turret .....	13	6
" " " after " .....	13	2
Freeboard, forward .....	9	3
" amidships .....	11	5
" aft .....	4	6
Depth of armour below water, amidships .....	5	9
Height of { one sides .. { forward ..	9	6
armour { " " " { amidships and aft	4	2
above { " " " { at fore end	11	9
water line { on breastwork { amidships	11	5
	Armour	Backing.
	On sides .. 12 & 10 in.	18 in.
	" bulkheads at	
Thickness of { break of deck 12 in.	16 in.	
armour and backing { On breastwork 12 & 10 in.	16 & 18 "	
	" turrets .. 14 & 12 in.	15 & 17 "
Thickness of { On sides ..	14	1 1/2 in.
skin plating { " bulkheads at break of deck	13	"
behind { " breastwork .....	14	"
armour { " turrets .....	14	"
Thickness of { On monitor deck .....	3 in.	(2 in. aft.)
deck plating { " deck over breastwork .....	1 in.	"
Engines, nominal horse power .....	800	
" indicated " .....	5600	
Estimated speed .....	12.5	knots
Complement of officers and men .....	300	
Armament, four .....	35-ton	guns
	tons.	
Weight of armament .....	512	
" crew and ship's stores .....	251	
" engines and engineers' stores, with		
water in boilers ..	967	
" coals .....	1600	
" turrets .....	592	
" pilot tower .....	110	
" deck plating and glacis plates .....	522	

Weight of armour, in other parts	....	....	1542
"    backing, ..	....	....	256
"    bull	....	....	
Probable surplus	....	....	

These figures are applicable to the original design, which has been somewhat modified, but the additions made (broad-side superstructure, &c.) will probably balance the expected surplus displacement, so that no material alteration need be looked for either in draught or displacement. The number of the crew will, we believe, be about 300, owing to the increased size of the guns.—*Engineering*.

## THE NINE HOURS' MOVEMENT IN HAMILTON.

On our first page we give a view of the procession of the nine hours' movement men in Hamilton on the 15th ultimo. The illustration, which is from a photograph by a local artist, shows the procession as it passed along South James Street near the corner of King.

In former issues we have fully discussed this important movement and endeavoured to prove conclusions which, while in themselves correct, were not adverse to the real interests of the workmen.

## "FILIAL LOVE."

(From the Illustrated London News.)

This very large and noble drawing, by Mr. Carl Haag, which worthily occupies a place of honour in the Water-Colour Society's present exhibition, may be quoted with Mr. Dobson's life-size group, called "Baby's Tea," as exemplificatory in a remarkable degree of the superiority of the method of painting transparently employed by the earlier masters of water-colours. Mr. Haag has sought for greater depth in his shadows than Mr. Dobson, and there can be no question that, for force and breadth of effect, this drawing has no parallel in the present exhibition—Mr. Dobson's group, however, being equally remarkable for breadth and beauty of colour. A power is attained by Mr. Haag which, on the scale of this work, is generally supposed to be only within the reach of oil-painting. Yet it might hardly be credited by some, without close inspection, that the artist has entirely abstained from the use of body colour. The most brilliant lights of the old man's white head-cloth and hoary beard are obtained by scraping up the surface of the paper, so that the resultant roughness shall catch the light—an expedient sanctioned by the practice of the early water-colourists. The scraper is also used with extraordinary skill and effect to render the rich texture of the old man's garment. The subject of the drawing requires no elucidation, and it could gain little from any attempt at enforcement of its pathos from the pen. The text which the painter quotes forms at once its best title, motto, and commentary: "My son, help thy father in his age, and grieve him not as long as he liveth." Among his Eastern experiences, Mr. Haag probably himself witnessed this incident of a youth lovingly leading a blind old father, among the rough stones and prickly cacti, on his desert way; and the representation is, doubtless, entirely faithful to Oriental customs and costumes.

VIEWS ON THE EUROPEAN AND NORTH AMERICAN  
RAILWAY.—OFF THE TRACK UNDER  
DOUGLAS MOUNTAIN.

The view which we present this week, "off the track," is one of several furnished by our talented special artist, E. J. R., of St. John, N. B., illustrative of the scenery on the European and North American Railway. It may be remembered that some time since we gave illustrations of the formal opening of this important road to connect with the American railway system. The Welsford Station, some thirty miles from St. John, nestled among the hills that surround the Nerepis Valley, is one of the most attractive spots on the whole route. The Douglas Mountain, so named because Sir Howard Douglas once dined on its summit, is one of the most picturesque views in the region.

LA BOULE, SAGUENAY.

Of this curious freak of nature Bouchette says :—

"*La Boule* or *The Ball*, a large rock or mountain, is so called from its shape and remarkable for its height and form. It is three miles N. E. of the mouth of the Saguenay and about six miles from Tadoussac. It forms a good harbour for vessels against the N. W. winds, and projecting much into the river its gigantic base straitens it and causes, when the tide ebbs, a strong current and counter-eddy. The tide rises eighteen feet perpendicular, and the lowest waters never leave the foot of these natural ramparts, where the depth of the water is so great that there is no anchorage. The banks of the river are here steep, and Mr. Latérière says from fifteen to eighteen feet high, and are of primitive granite."

The neighbourhood is much frequented by lovers of sport, as the fishing is unsurpassed.

CAPE TOURMENTE.

This cape furnishes one of the grandest scenes on the Lower St. Lawrence. It is situated near the lower end of Grosse Isle, on the north side of the river, and rises to a height of about two thousand feet. It is thirty-three miles below Onbec, nearly opposite Montmagny.

Caviare, an important article of commerce, is prepared from the roes of large fish, chiefly the sturgeon, and is much used as an article of food during seasons of fast in Russia, Italy, and other countries. Russia has hitherto almost monopolized its preparation and sale. From Astrakhan alone 30,000 barrels have been exported in a single year. Some years ago two Germans, living near Lake Erie, observing that the fishermen of the lake derived but little benefit from the numerous sturgeon abounding in its water, made a contract by which

they were enabled to get an abundant supply of that fish on very moderate terms. Then they put up a shanty on the shore of the lake, and went into the business of preparing caviare, and have been so successful that their product has acquired an extensive celebrity, having been pronounced fully equal to the Russian article. They not only send their caviare to all parts of the United States, but have exported large quantities to Europe.

**LEAD PENCILS.**—A lead pencil is in itself a small affair, but considered as a manufactured product, it rises into much importance. To start a first class factory, with improved machinery and stock of well seasoned wood, requires a capital of about \$100,000; ground covered is about half an acre, chiefly occupied by drying houses for the storage of red cedar. The Florida red cedar is mostly used in this country and in Europe—some "iben" wood, as the Germans call it, or English yew, is used in Germany—white pine is occasionally used for a common grade of a carpenter's pencil.

The "lead" of the pencils is the well known graphite or plumbago; the best of this is the natural, found in a pure state in masses large enough to cut into strips. Of this there is but one mine now up to the standard, which is in Atlantic Siberia, and pencils made from this graphite are all one grade, and pay here 50 cents per gross special, and 30 per cent *ad valorem* duty. The Cumberland mines in England were the first discovered, but are now almost exhausted. What was formerly refuse in cutting the graphite is now ground, cleaned and refined, and then mixed with a fine clay.

In mixing the clay and graphite, great care must be taken in selecting and cleaning the clay and getting the proper proportions; the mixture, with water, after being well kneaded, is placed in a large receiver and strongly compressed and forced out through a small groove at the bottom, in the shape of a thread of the thickness and style required—either square, octagon, or round. This thread, or lead wire, is cut in bars of the proper length (done by little girls), and then straightened, dried at a moderate heat, and packed in airtight crucibles and placed in the furnaces; the grade of the lead depends upon the amount of heat it is exposed to, the amount of clay used in mixing, and the quality of the plumbago. The colouring of the lead is by various pigments.

The wood after being thoroughly seasoned, is cut in thin strips and dried again, then cut into strips pencil length. These strips are grooved by machinery, then carried on a belt to the glueing room, where the lead is glued in the groove, and then the other half of the pencil glued on. After being dried under pressure, they are sent to the turning room and rounded, squared, or made octagon, by a very ingenious little machine, which passes them through three sets of cutters and drops them ready for polishing or colouring—the former is done on lathes by boys, and the latter by a machine which holds the brush and turns the pencils fed to it through a hopper. After the pencil is polished, it is cut the exact length by a circular saw, and the end is cut smooth by a drop knife, the pencil resting on a iron bed.

The stamping is done by a hollow die, which is heated; the gold or silver foil is then laid on the pencil which rests in an iron bed, and the die is then pressed on it by a screw lever. The pencils are then ready to go to the packing room, whence they find their way to all parts of the civilized world at prices ranging from two dollars to twenty dollars per gross.—*American Exchange and Review.*

THE ARABIAN MODE OF PERFUMING.—How the Arab ladies perfume themselves is thus described by Sir Samuel Baker in his work on the Nile: "In the floor of the hut or tent, as it may chance to be, a small hole is excavated sufficiently large to contain a champagne bottle. A fire of charcoal or simply glowing embers is made within the hole, into which the woman about to be scented throws a handful of drugs. She then takes off the clothes, or robes which form her dress, and crouches over the fumes, while she arranges her robe to fall as a mantle from her neck to the ground like a tent. She now begins to perspire freely in the hot air bath, and the pores of the skin being open and moist, the volatile oil from the smoke of the burning perfumes is immediately absorbed. By the time the fire has expired, the scenting process is completed, and both her person and her robe are redolent with incense, with which they are so thoroughly impregnated that I have frequently smelt a party of women strongly at full a hundred yards distance, when the wind has been blowing from their direction. The scent, which is supposed to be very attractive to gentlemen, is composed of ginger, cloves, cinnamon, frankincense, and myrrh, a species of sea weed brought from the Red Sea, and lastly the horny disc which covers the aperture when the shell fish withdraws itself within its shell. The proportions of these ingredients in this mixture are according to taste."

The origin of the Carlist troubles in Spain has a close relation to the question of women's rights. In the year 1829, Ferdinand VII., being then in his forty-sixth year, a widower and childless, married a young wife, Christina, a Bourbon of the Two Sicilies. This young woman induced King Ferdinand to annul the Salic law which governed the succession, and excluded females from the throne of Spain. The law was annulled about four months previous to the birth of the first child, Maria Isabella. Another daughter was born, and the King died in 1833. Under the Salic law Don Carlos, Ferdinand's younger brother, had been the next in succession to the throne; but that law having been annulled by royal decree, the infanta, Maria Isabella, was proclaimed Queen. Don Carlos was banished and the popular risings in his favour promptly suppressed by the Regent Queen Christina. The Carlists, however, again rose in rebellion, and after a bloody struggle of seven years' duration, the contest was settled in favour of the Queen. The Don Carlos of to day is the grandson of the Prince in whose behalf the party was first established. He is married to a Bourbon of the House of Parma by whom he has one son and two daughters. The triumph of Don Carlos would simply result in the establishment of the old Bourbon régime, with its retrogressive policy and despotic tendencies.

A Kansas paper, in reporting a trial, concludes with "the jury returned a verdict of not guilty, but if the prisoner is sharp he will leave town without loss of time."

Smart boys in Quincy, Ill., cut off rats' tails, plant them in flower pots, and sell them to unsophisticated florists as a new species of cactus.