

## THE BERMUDA FLOATING DOCK.

The *London Scientific Review*, speaking of this gigantic structure at the time of its construction, some three years and a half ago, says:

"The British Government, being impressed with the absolute necessity of providing dock accommodations for the iron-clad ships and other vessels constituting the North American and West India squadron, determined some time since to build a capacious floating dock of iron for service at Bermuda. When Admiral Sir Alexander Milne commanded on that station he pointed out to the Admiralty this great want. During the past ten years many iron-clads have been added to our fleet; and although most of these have been paved below water line with various compositions, the hulls of most ships after service afloat were exceedingly foul. The iron men-of-war on the North American and West India stations were no exception, but after a shorter or longer time afloat were more or less covered below water-line with barnacles, weeds, and parasites, thus impeding the speed of the vessel and causing other annoyances.

"The want of a dock in the West Indies, in which a ship could be laid up for cleaning the bottom and for necessary repairs, induced the Government to construct a monster floating machine at a cost of nearly £250,000. This dock was built by Messrs. Campbell, Johnson & Co., of the Albert Works, Silvertown, from plans patented by Mr. Campbell, and adopted for the Royal dockyard at Bermuda by Colonel Clarke, R. E., the Government director of works. This great iron floating structure, the largest in the world, is of the following dimensions: Extreme length, 381 feet; width inside, 83 feet 9 inches; width over all, 123ft. 9 inches; depth, 74 feet 5 inches. The weight of the dock is 8,350 tons, and it is asserted that a vessel weighing 10,000 tons or more may be easily lifted, making the total approximate displacement about 19,000 tons.

"The dock is U-shaped, and the section throughout is similar. The iron-clad "Bellerophon," and ships of similar and of smaller size, may be easily received into this capacious hollow, and when once the dock is in position ships forming the squadron on the West Indian station will no longer be subject to great and ever-recurring inconvenience. It is built with two skins fore and aft, at a distance of 20 feet apart. The plans show that the space between the skins is divided by a watertight bulk-head, running with the middle line the entire length of the dock, each half being divided into three chambers by like bulk-heads. The three chambers are respectively named "load," "balance" and "air" compartments. The first-named chamber is pumped full in eight hours when a ship is about to be docked, and the dock is thus sunk below the level of the horizontal bulk-heads which divide the other two chambers. Water sufficient to sink the structure low enough to admit a vessel entering is forced into the balance chambers by means of valves in the external skin. The next operation is to place and secure the caissons and eject the water from the "load" chamber. Then the dock with the vessel in it rises, the water in the dock being allowed to decrease by opening the sluices in the caissons. The dock is "trimmed" by letting the water out of the "balance" chamber into the structure itself. The inside of the dock is cleared of water by valves in the skin, and it is left to dry. When it becomes necessary to undock the vessel the valves in the external skins of the "balance" chamber are opened in order to fill them, and the culverts in the caissons are also opened, and the dock sunk to a given depth. From keel to gunwale nine main water-tight ribs extend, further dividing the distance between the two skins into eight compartments. Thus there are altogether 48 water-tight divisions. Frames made of strong plates and angle iron strengthen the skins between the main ribs. Four steam engines and pumps on each side—each pump has two suction, emptying a division of an "air" chamber—are fitted to the dock, and these also fill a division of the "load" chamber. When it becomes necessary to clean, paint, or repair the bottom of the dock it is careened by the weight of water in the load chambers of one side, and the middle line is raised about five feet out of the water. This gigantic structure is a splendid specimen of workmanship; and, although intrinsically ugly, the skillful toil of the artisan for two years is manifest in the *tout ensemble* of the first great floating dock ever put together in England.

"Two other vessels of this kind, have, we believe, been built and sent abroad—one to Cadiz and another to Callao—in pieces; and this is the only dock fitted in this country ready for transport in a complete condition.

"The question has been asked whether it would not have been judicious to construct an ordinary dock at Bermuda; but when it is remembered that the island itself is only a coral reef, and that no good foundation can be got, the answer is directly given to this query. Then arises a surmise whether such a leviathan machine could successfully encounter bad weather in the high seas. There is no reason to suppose that the dock would founder, because it can be made as tight as a bottle; and should it get in the trough of a heavy sea, end on, the water would enter at one end and flow from the other. It would, in fact, live on the wave like a well corked bottle. The vessels towing it out would have to keep its head to the gale, and avoid collision; then there would be no risk and little danger.

"The Bermuda dock has an enormous rudder, and this has lately been increased considerably in area at the after-end by a large number of planks, in order to give more steering power. Its cutwaters are formed like the bows of a barge, to divide the water, and by that means diminish the resistance, and enable the dock to be more easily towed."

The departure of this huge iron floating dock from the Thames took place easily in the summer of 1869. It was towed along by two powerful ironclads, the "Northumberland" and the "Agincourt," and aided by most favourable weather, arrived safely at Porto Santo, one of the Madeira Islands, on the 4th July, without the slightest mishap. The floating dock was there at once taken in tow by another couple of ironclads, the "Warrior" and the "Black Prince," and was safely brought to its destination.

## SKETCHES FROM THE CAPITAL.

The sketches at the Capital which have week by week appeared from the pencil of our artist, require no explanation. In the present number we give a scene in the Senator's Gallery, in which it will be perceived that a very large proportion of the space is devoted to the accommodation of ladies. This, however, is to be attributed to the fact that the venerable gentlemen who fill the upper House with

decorum and dignity have not forgotten the gallantry of younger days, and consequently extend their courtesies not alone to the ladies of their own families, but also to others who may enjoy the privilege of their acquaintance. Those familiar with the galleries of the House of Commons will probably recognize some of the "familiar faces" portrayed; but the sketch is mainly intended to represent what may be seen on any afternoon or evening when the House is in session. It is not uncommon for ladies to sit in the Senators' Gallery, nor for Ministers or other privileged persons to call upon them there and enjoy a friendly *tête-à-tête* while the assembled wisdom in the chamber below is gravely discussing the affairs of the nation.

## ON THE CROQUET LAWN.

The Hellmuth Colleges have already been illustrated and described in the *News*. M. Kroupa, who is the Professor of drawing at one of these institutions, furnishes us this week with a scene showing the young ladies on the Croquet lawn. These admirable institutions have done very great service to the western section of Ontario, and given an academic flavour to the atmosphere of the society of the "Forest City," of which its denizens may be justly proud.

## NEGRESSES SELLING MAY-FLOWERS.

Our special artist, W. O. C., contributes a lively sketch of a scene at the Provincial Market, Halifax, in which a number of the coloured population are engaged in the sale of May-flowers, the first spring flowers that make their appearance in the woods of Nova Scotia. The vendors, it will be noticed, indulge in the use of the "weed," preferring its flavour to that of their merchandise, which they collect, not for themselves, but for their customers.

THE MODERN GREEK LANGUAGE.—Professor Blackie, of the University of Edinburgh, delivered a lecture on this subject at the Friday evening meeting at the Royal Institution, April 26. He began by asserting that the Greek language is the only living bridge between the intellect of the present and that of the past, having maintained its vitality while Hebrew, Latin, Sanscrit, and all the great bearers of ancient culture are numbered with the dead. There is no such thing, he said, as absolute fixation in living languages, since change is necessarily the very source of life. Nevertheless, the element of mutation inherent in them is controlled by two conservative forces—internal and external; the internal being the powers of commanding intellect, of plastic genius, to which the masses of men instinctively concede an authority in matters of style and expression; the external being the two great institutions of Church and State. In respect to these classes of forces the Greek language possesses a momentum, a spring of permanent energy, in a long succession of poets, philosophers, and scientific men, which created a dictatorship that could only be shaken by disturbing forces of the most violent kind. To this was added the influence of the centralising Government at Constantinople and the intense inspiration of a common Christian Church, popular in its doctrines and aristocratic in its government. It was thus enabled to resist the inroads of the corrupt popular dialect, of whose existence evidence is found in poems, now extremely difficult to understand, even with the help of a learned commentary. At the time of the Crusaders there existed in Byzantium a distinct bi-stratification of the Greek tongue—a classical type of speech used by men of education, and a vulgar type, the organ of the uneducated masses. This continued till the taking of Constantinople by the Turks, in 1453; but then, instead of the old classical type ceasing and a new language arising, standing in the same relation to ancient Greek that Italian does to Latin, the weight of inherited intellectual and ecclesiastical authority and the character of the Ottoman policy and religion rendered a fusion of languages impossible. The Greeks hated the Turks intensely, and the smothered embers of patriotism, of which the language was a part, were fanned into a flame by forces which, under different circumstances, would have extinguished them. Thus the languages continued till the great revolt in 1821, sprinkled or spotted over with barbarisms and adulterations, but retaining a stout muscular heart, pumping with genuine Hellenic vitality, and able at any moment to throw off its excrescences. In this state it was found by the great patriot and scholar Koræes (born 1748), the reformer of the language, who retained the grand features of the Romaic idiom and brushed away its superficial defacements, perceiving that, if the language was to be used by Greek men of letters for the improvement of the people, it must be in a genuine, popular form; and thus he wisely made a compromise. For the existing Neo-Hellenic the Greek newspapers are, doubtless, the best standard; but since the restoration a strong tendency to renovation and purity has manifested itself among Greek writers, so that as types of Romaic for philological purposes it is better to take some popular work of the last century, published at Venice or Vienna, before the influence of Koræes began to be felt. With regard to the philological character of modern Greek, the Professor showed how sometimes by curtailment, and sometimes by addition, the original classical form of the words has been considerably changed; but that the rich vitality of the language showed itself in a crop of new terminations and new compounds; while any foreign elements which in the course of time had attached to it were now thrown off like the scurf of a skin disease when a purer blood is made to circulate through the system. The true accentuation of the old grammarians has been retained by the living Greeks; while English scholars have systematically exchanged the ancient beautiful orthoepy for an arbitrary mixture of Latin intonation and English vocalisation. In respect to the future of modern Greek, the Professor expressed his opinion that, after having withstood so many changes, it would maintain its powers, even if the kingdom should be absorbed by a great empire, probably Russia, and that in such case it might supersede Latin and become the Catholic organ of intellectual intercourse between the educated men of all nations.

The teeth in the insane are prone to undergo certain changes. Dr. Langdon Down, who read a paper on this subject recently before the Odontological Society, states therein that from the examination of nearly one thousand cases he has found that he could in the majority of instances state the period at which the imbecility or insanity began.

THE IMITATION OF GEMS.—Nowhere has chemistry—the science most essential for this purpose—been brought to greater perfection than in France. Accordingly, none have attained more skill in the art of imitating gems than the French. If the revenue that Paris has derived from this source alone for the last quarter of a century were stated in plain figures, it would seem more fabulous than any story in the "Arabian Nights." But it would seem worse than fabulous to say that three-fourths of those gems which were worn daily, or at least nightly, in New York, Philadelphia, and Boston, including those that sparkle on the bosoms of some of our great men, have contributed to that revenue, in proportion to their size and characteristics. Yet it would really be no exaggeration of the fact. Let those who think we want to trespass on their credulity turn to the works of Kunkele, Ners, and Fontainieu. That of M. Fontainieu alone would be sufficient. That learned member of the Royal Academy of Sciences has been enabled by a long series of experiments, to produce a perfectly colourless crystal. This he calls "fondant," or base. He has formed one by each of the five different processes; he has also shown how the various colours are produced, according as a given piece of crystal is intended to be a diamond, an amethyst, an emerald, a ruby, &c. Several German chemists have given the world the benefit of their researches on the same subject, and some have enriched themselves and others by them. This is true, for example, of Professor Lippert, of Dresden, who prepared 3,000 casts; of these one jeweller bought 1,000, and rapidly made his fortune; the remainder were purchased by different jewellers, each of whom obtained the prices of real gems. Since the celebrated experiments of Lavoisier, every person of ordinary intelligence is aware that the diamond is simply pure carbon crystallised, and that it can be burned in oxygen, the sole result of the combustion being carbonic acid. M. Despretz, another French chemist, has actually made real diamonds, having melted and crystallised carbon by means of a galvanic battery; but Nature has so carefully kept the secret to herself thus far, that the learned Frenchman's diamonds are so small as to be visible only with a microscope.

THE PLANETS JUPITER AND SATURN.—Jupiter as an abode of life is a source of wonder and perplexity, and his satellites seems scarcely to serve any useful purpose. He appears as a bleak and desolate dwelling-place, and they together supply him with scarcely a twentieth part of the light which we receive from our moon at full. But regarding Jupiter as a miniature sun, not indeed possessing any large degree of inherent lustre, but emitting a considerable quantity of heat, we recognise in him the fitting ruler of a scheme of subordinate orbs, whose inhabitants would require the heat which he affords to eke out the small supply which they receive directly from the sun. The Saturnian system, again, is no longer mysterious when thus viewed. The strange problem presented by the rings, which actually conceal the sum from immense regions of the planet for years together in the very heart of the winter of those regions, is satisfactorily solved when the Saturnian satellites are regarded as the abodes of life, and Saturn himself as the source of a considerable proportion of their heat-supply.—*Cornhill Magazine*.

QUESTION BY THE CIVIL SERVICE COMMISSIONERS.—What useful properties may be extracted from the bark of a dog? Discuss the manner by which the truth or falsehood of the report of a gun may be tested. Describe an engagement on land. (For the marines this question is meant, therefore the nautical solution which follows will not be admitted. That is, an engagement, &c., consists of a courtship, followed by numerous splicings or heavy damages). How many pounds of the extract of Greek and Latin roots are sufficient to fatten—(1) a wedder; (2) a bullock; (3) a donkey? What is the difference between extracting an aching stump, and extracting the root of an equation? What connection exists (on the maternal side) between a first-floor lodger and the garret-occupier? Note on the last question by a rejected candidate: Most likely the duffer who proposed this question don't know the correct answer himself, and only wants news. I won't tell him. I'm blest if I doo.

To those who are bent on matrimony, but have not found a suitable partner, we offer urgent advice. Let them pack up all their property and start immediately for the mountainous districts to the extreme east of Hungary. They will find that at this season of the year a fair is held of marriageable young men and women. From all quarters long trains of chariots wind their way to the plain of Kalinosa. They are laden with household furniture, and followed by the cattle of the family. In the midst of these goods may be seen the young lady whom her family has brought to seek a husband at the fair. She is dressed in her best, with brilliant silk scarf and scarlet petticoat. These caravans take up their position one after the other on one side of the plain, while on the other side a cavalcade of young men approaches and deploys along the whole line. The men—young Wallachians, for the most part—are dressed in their best goatskins and make what show of horsemanship they can. After both parties have taken up their respective quarters opposite each other, the fathers step forward and begin to negotiate marriages for their children. The questions asked on these occasions are, we fear, of a somewhat sordid character. "How many bullocks?" "How much money?" "Your daughter's furniture looks rather old;—the chest of drawers does not shut properly. I must find something better than that for my son." Such would doubtless be a correct report of the conversations held in this primitive if not poetical Arcadia previous to clinching the matrimonial bargain. The business is, however, carried out with a promptitude equal to its frankness. As soon as the parents are agreed a priest, who is always ready at hand, is summoned. He chants a hymn and gives his benediction, the bride then kisses her parents, mounts the chariot, and starts for some unknown village with a husband whom she has never seen before, the furniture and cattle which her parents have allowed her as a marriage portion following in the rear. Thus every year many unions are contracted by this primitive people, and there is, we must confess, a plain honesty and absence of sham in this style of proceeding. One is apt to compare it with the deceptions and artifices employed in civilized society by those who, pretending to love, only seek to marry fortunes.—*Pall Mall Gazette*.

One reason why the Pope thinks so much of American Catholics is said to be that he never takes up an American paper without seeing something about Boston Mass.