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SUMMARY.

THREE THOUSAND ship-joiners in Glasgow have struck.

A WEALTHY Russian named Switch has been robbed in England of £15,000 by his interpreter, Nivetcht, who absconded.

THE Wesleyan Female College in Cincinnati was bought in at public sale last week for $78,000 by the trustees, thereby saving the school to the city and Methodist Church.

MR. THOMAS SHAW, Liberal, has been elected without opposition, to the seat in the House of Commons for Halifax, made vacant by the resignation of Mr. J. D. Hutchinson, Radical.

Dr. Reyburn has filed a claim for professional services against the Garfield estate for $8,000 or $9,000. It is understood Drs. Hamilton and Agnew will soon file claims for $15,000 each.

A TELEGRAM from Vienna states that over one hundred women are on trial at Gross Betskerek, Hungary, charged with poisoning their husbands. The guilt of thirty-five of the women has been proved.

THE Right Hon. John Bright, who had been invited to attend the New England Fair, in Worcester, writes from England that he has no intention of visiting this country, although it would give him great pleasure.

WILLIAM FITZPATRICK, of Milwaukee, claiming to be the heir to the throne of Ireland, has been writing Mr. Gladstone urging his royal sister Victoria to renounce her title to his country. He does not appear to be a crank.

LORD GRANVILLE, the British Secretary of State for Foreign Affairs, has sent through the State Department Queen Victoria's thanks to the New Jersey Legislature for the resolution of sympathy passed after the recent attempt on her life.

ARCHBISHOP GOOLD, of the Roman Catholic diocese in Melbourne, has been shot and slightly wounded. His assailant has been arrested. The name of the man is O'Farrel, and he is a brother of the man who attempted to assassinate the Duke of Edinburgh at Sydney, in March, 1868.

TEXAN fever has attacked the cattle in several slaughter houses on the outskirts of Auburn, New York. All beef is sold under certificates of the Board of Health. The action of Governor Cornell is awaited with interest. Matters are at a standstill pending his orders. Street peddling in the city has been stopped for six weeks. Probably all infected fields will be quarantined till the cold weather.

A SIMLA despatch says that the draft of the treaty negotiated between the Indian Government and the Burmese mission has been rejected by King Theebaw, who objects to the clauses providing for the abolition of monopolies and the maintenance of an armed guard at the British residency in Mandalay. The negotiations are finally closed, and the Burmese mission leave in a few days for home.

A GENERAL ORDER was issued from the Post-Office Department, Washington, D.C., recently, directing the daily exchange of international mails between the St. Paul and Breckenridge, Minn., Railway Post-Office and the Canadian Post Offices of Emerson and Winnipeg, Manitoba. The exchange will begin on September 1st, and will include all international correspondence except book packets from Canada for the United States.

THE report of the Commissioner of the General Land Office, Washington, for the year ending June 30th, will show an inroad upon the area of the public domain unprecedented in the history of the country. The total acreage taken in the past fiscal year is 15,700,000, against 10,893,000 in the previous year. The receipts of the office in the past year were $8,361,000, against $5,409,000 in the previous year. Homestead entries for the past year amount to $6,348,000 acres, against 5,028,000 for the previous year. There have been quantities of land taken under the Homestead Act in the Southern States, but over one-third of the whole homesteads in the past fiscal year have been located in Dakota.

CANADIAN.

A PETITION was filed in Osgoode Hall on Wednesday against the return of Mr. J. J. Hawkins as Conservative member for Bothwell.

THE HON. J. H. CRAWFORD, Solicitor-General, of New Brunswick, died on Monday at Hampton. He was thirty-nine years old and represented Kings County in the Local Legislature twelve years.

THE "NORTHAMPTON," the flagship of Admiral Sir Leopold McClintock, arrived in Quebec on Monday, and at noon the Admiral landed and paid his respects to the Governor-General and Princess at the Citadel.

THERE is excitement in Limerick because six sub-constables, supposed originators of the recent agitation, have been ordered to the northern counties. The men asked for a day's time before leaving, which was refused. Thereupon they resigned. Many other resignations have taken place. The Government has promised to investigate the men's grievances.

THE PETITION against the return of Mr. J. J. Hawkins for Bothwell, O., sets out with illegal acts on the part of the returning officer, and that he, his son and some deputy returning officer acted as agents for Mr. Hawkins, and that the son, who was elected clerk, and some of the returning officers, were illegally interested in the result of the election.

IN THE CASE of Bronson vs. the Canada Atlantic Railway, an action to restrain the Company from passing under the aqueduct bridge at the Chaudiere, judgment was to have been, given by Judge Osler if both parties had met before him. Only the defendant was present and the Judge said that he would give judgment after the vacation and it would be in favor of the railway company.

MAJOR HEBERT, of B Battery, Kingston school of gunnery, who has already started to join the British forces in Egypt, is to have his expenses paid by the Government and receive one dollar per day. He carries with him letters to the commander-in-chief, Sir Garnet Wolseley, and other generals. Major Wilson, of the same corps to which Major Hebert belongs, also applied to be sent to Egypt but was refused.

FINAL ARRANGEMENTS for the annual prize meeting of the Dominion Rifle Association for 1882 have just been completed. Col. Gzowski being absent Col. Maunsell will take the former's place. The total cash prizes amount to $5,000. Two extra prizes are offered, an organ by the Dominion Organ Company, and a sewing-machine by the Lawlor Manufacturing Company, Montreal. The meeting begins Sept. 4th. Movable targets will be used in several matches.

THE M. E. CONFERENCE was in session Thursday in Hamilton. Bishop Carmen delivered his annual address, in which he spoke of the condition of the work throughout the church, and recommended among other things that no preacher be allowed to marry till after he is ordained. He recommended the renovation of district conferences, and the abolition of the preachers' conference. In the evening an educational meeting was held, and addresses were delivered by Dr. Jacques, of Albert College, and Principal Austin, of Alma College, and others.

MR. SAMUEL BRUCE, Government Interpreter, arrived in Ottawa last week from the North-West, on business with the Department of the Interior. He is employed instructing the Plegans to farm. He says the Indians have taken more kindly to farming this year. One of them last year sold over $300 worth of potatoes to the Government. At present they all live in cabins. There is now a supply farm near Fort McLeod of three hundred acres, under plough. Seed is raised on this farm to supply the natives. Liquor is unknown among the Indians now.

THE TRIAL of the owners of the steamer "City of Toronto" before Mayor Calloth and W. Kirby, Esq., J.P., in Niagara, Ontario, for running an excursion party from Niagara to Toronto, Ontario, on Sunday came off on Friday. The party, numbering about 400, were brought from Buffalo by the Canada Southern Railway. It was claimed they were travellers going to Toronto. It was shown that the whole crowd had but one trunk among them, and the Buffalo handbills announcing the trip were headed, "Sunday Excursion." Captain Fortier was fined $40 and costs.

THE WAR IN EGYPT.

GEN. WOLSELEY VISITS M. DE LESSEPS —A SHORT CAMPAIGN WANTED BY THE WAR OFFICE—TEN THOUSAND EGYPTIANS KEPT AT BAY A WHOLE DAY BY TWO THOUSAND BRITISH—OCCUPATION OF DANIETTA, MAXAMA AND RAMSES BY SIR GARNET WOLSELEY.

MUST BE QUICK ABOUT IT.

LONDON, August 22.—The War Office is impressing on Sir Garnet Wolseley the necessity of a short and decisive campaign in Egypt, in order to spare the British troops from the ravages of disease caused by drinking the waters of the various canals of Egypt.

LANDING THE TROOPS AT ISMAILA.

ISMAILA, August 22.—9 a.m.—The landing of troops from the transports proceeded actively all night and continues to-day. The orderly behavior and general bearing of the soldiers are the admiration of the population.

FIGHT AT SERAPEUM.

Yesterday afternoon the Seventy-second Regiment engaged the enemy at Serapeum, and repulsed them. Two of our men were killed, five wounded, and the enemy lost 100 men and four guns.

SUEZ, August 22.—Four hundred men of the 72nd Regiment left here yesterday morning for Serapeum. When they reached that village they found it deserted, and the railway stock carried off. From the end of Bitter Lake the enemy were seen in large numbers three miles off, retreating northward. The Highlanders, who participated in the fight at Shaluf on Sunday, have occupied the Freshwater Canal lock at Serapeum, an important position, from which the enemy had retreated. The prisoners taken in the engagement state that Arabi forced them to fight, threatening to shoot them if they refused. They say the chief officers fled soon after the action began. The success of the British forces at Shaluf, and the energy displayed by them in searching the coast toward Ismaila, has thoroughly demoralized the enemy. Opposition on this side of the canal may be considered ended.

THE BRITISH LINES.

Nefich forms our advance post. From thence a chain of sentries extends around Ismaila. The nearest camp of the enemy is Rameses, and the next is Poly, 14 miles off, while their main position is 34 miles distant. General Hamley's division has been ordered to come here at once.

PORT SAID, August 22.—The English occupy both banks of the canal at Canara. Troops have taken possession of the telegraph lines at El Arish. The British force which occupied Nefich, after the flight of the Egyptians, found several soldiers lying dead. A number of dismounted guns, ready for removal into the interior, lay by the railway.

BAIK STATION SHELLED.

At six o'clock this morning the gunboat "Mosquito" passed Bitter Lake and shelled Baik station. Subsequently the troops landed from the gunboat and found the place deserted, while large bodies of Arabi's cavalry were seen streaming toward the desert.

REPAIRING THE RAILWAY.

A company of engineers is repairing the railway to Nefich. They are supplying locomotives with a quantity of coal captured from the enemy. The Household Cavalry are now landed.

M. DE LESSEPS AND ARABI.

Some compromising telegrams from M. De Lesseps to Arabi have been intercepted.

Sir Garnet Wolseley visited M. De Lesseps yesterday. He explained the action of the British in regard to the Suez Canal. He said everything would be over in a few days, but that the English must use the canal for the present. M. De Lesseps expressed himself as fully satisfied with General Wolseley's explanation, and said he regretted there had been any misunderstanding on the subject.

ANOTHER DECREE.

ALEXANDRIA, August 22.—The Khedive has issued another decree to the authorities to implicitly obey Sir Garnet Wolseley, who is authorized to restore order in Egypt.

A COOL PROCEEDING.

ALEXANDRIA, August 22—It is stated that during the reconnaissance Gen. Alison walked forward to inspect the enemy's position. He was probably recognized, as he became a mark for the enemy's shells. Five fell around him as he walked back, never quickening his pace, the nearest coming within a few yards of him.

To-day General Wood, with two captains, was standing by a clump of trees in front of the most advanced picket, when a shell fell only ten paces distant, and was buried in the sand. General Wood then climbed a tree for the purpose of making an observation, when a second shell fell just behind the horses of the officers.

ARABI'S OFFICERS SURRENDERING.

Seven more of Arabi's officers surrendered on Tuesday. They allege that many more officers and men wish to surrender, but are afraid, owing to Arabi's spreading reports that the English shoot all prisoners.

RECONNAISSANCE FROM KAFR EL-DWAR.

ALEXANDRIA, August 22.—This afternoon about 600 Highlanders made a reconnaissance from Kafr el-Dwar. Simultaneously the 40-pounders at Water Works Hill opened fire. The Egyptians replied. After the third round there was no infantry firing. The British are bringing more heavy guns into position about 150 yards in advance of their present position on the Ramleh lines. The Egyptian officers appointed by the Khedive to accompany the British army started to-day *via* Port Said.

ARABI'S TACTICS.

ALEXANDRIA, August 22.—The smoke of numerous trains is again visible below the enemy's lines. The activity of Arabi has increased in a manner indicating a complete change in his plans. In answer to our reconnaissance to-day his guns opened fire from various directions, showing that during the night the enemy's artillery had been much strengthened. A new battery had arrived with six guns and been placed in position. It now seems that at the first scare caused by the discovery that the fleet had gone to the canal, Arabi withdrew a great portion of his infantry to Damanhour but last night, considering that some time must elapse before the advance can be made from Ismaila, with sufficient force to carry his defences on the line up to Zagazig, he again advanced to the place, which he hopes to hold till the rise of the Nile will enable him to flood the country. The report that Arabi had withdrawn a considerable number of troops from our front is incorrect. On the contrary, the enemy's trains brought in more cavalry. It is stated officially that about two miles out on the road to Kafr-el-Dwar the enemy have thrown up new earthworks, which are stronger than those we actually face.

ISMAILA, August 22.—Arabi was here three days ago, and dined with M. DeLesseps. He reported that his troops were at Tel-el-Kebir, strongly entrenched.

THE NILE RISING.

ALEXANDRIA, August 23.—The Nile is rising rapidly, and will soon overflow the banks. Inundation at low points has commenced.

Riaz Pacha has arrived.

RUNNING AWAY.

ISMAILIA, Aug. 23.—Since the engagement at Shaluf the enemy has left every position they held between Suez and Ismailia and are retreating in disorder toward Zagazig. The Indian cavalry will come on here.

MORE INCENDIARISM.

ALEXANDRIA, Aug. 23.—Fires were observed last evening in the neighborhood of Aboukir and Kafr-el-Dwar. It is believed a part of the Egyptian force is burning villages during the preparations to retreat.

ISMAILIA, August 24.—Sir Garnet Wolseley intends pushing into the interior at once. A tramway is being rapidly laid between the railway station and the quay.

CAIRO.

PORT SAID, Aug. 23.—The Government schoolmaster arrived from Cairo on the 14th. He states that torchlight processions parade nightly, men and boys calling on Allah to send death to the English and all Christian dogs. The Coptic Archbishop, for fear of his life, is doing all demanded of him by Arabi. The latter is levying war contributions throughout the country. Every fellah must pay from 2 to 8 piastres; according to his possessions, half his cattle and a measure of wheat.

Midshipman Dechair continues to be treated in princely fashion by his captors.

SOUDAN REMAINS LOYAL.

PORT SAID, Aug. 23.—There has just arrived here from Soudan an Egyptian officer, who says that he is deputed by Mehemet Naadi, Governor of Soudan, to inform the Khedive that he and all the officers and soldiers of his command are loyal and will not recognize Arabi.

SPAIN AND THE CANAL PROTECTION.

MADRID, August 23. The correspondent of the *News* hears in official circles that the Government has determined to express its willingness to join with Russia and Germany in protesting against the protection of the Suez Canal being confined to the British, and desires for Spain to be admitted under protection of the Eastern Powers to the Conference when the Powers again discuss the subject of the canal. The majority of Spaniards, however, are indifferent to foreign politics, feeling more concerned at the trouble by the drought, which has destroyed a great part of the harvest, and seriously threatens the vintage.

Gen. SIR GARNET WOLSELEY, Commander-in-Chief.

Lieut.-Gen. SIR JOHN ADYE, Chief of the Staff.

Major-Gen. SIR A. ALISON, Commander 3rd Brigade.

AN AUSTRIAN WARSHIP'S BAD MISTAKE.

ALEXANDRIA, Aug. 23.—The Austrian gunboat "Nautilus," bound from Port Said to Alexandria, passed Aboukir on Monday. The commander, seeing the white flag flying on Aboukir forts, supposed they were in possession of the British, and sent a boat ashore with an officer and twelve men, who were made prisoners by the Egyptians.

BAD NEWS FROM SYRIA.

CONSTANTINOPLE, August 23.—The hesitation of the Sultan to ratify the military convention with England is said to be principally due to the receipt of anonymous threatening letters from Syria, Arabia and Egypt.

There are alarming rumors to-day that the Porte has received unfavorable despatches from Syria. The Governor has reported that Christians have been assassinated at Beyrout, and several others maltreated.

The Druses of Lebanon attacked several Maronite villages. The Governor of Damascus has asked for strong reinforcements.

THE SHEIK UL ISLAM'S EXPLANATIONS TO LORD DUFFERIN.

CONSTANTINOPLE, August 23.—Ahmed Essod Effendi, the Sheik Ul Islam, in an interview with Lord Dufferin yesterday, explained the origin of the Egyptian revolt, with the object of showing that the Sultan had not contributed thereto. He also declared that the Sultan regarded Arabi as a rebel.

CONSTANTINOPLE, August 23.—The Sheik Ul Islam paid Lord Dufferin a second visit to-day. Lord Dufferin announced that he had received instructions from his Government to sign the draft of the military convention as agreed upon between himself and Said Pasha on the 18th inst., which had been left subject to further consideration. Mr. Sandison had previously conveyed the same intelligence to the Sultan. The interviews between Sheik Ul Islam and Lord Dufferin are understood to have helped to clear the situation. Lord Dufferin gave the Sheik reassuring explanations in regard to the intentions of England. Lord Dufferin will have an interview with Said Pasha to-night, when it is hoped the military convention will be definitely concluded.

THE MULE TROUBLE OVER.

CONSTANTINOPLE, August 23.—In consequence of the representations made by Lord Dufferin, the Porte has authorized the exportation of mules from Smyrna for British service in Egypt.

ARABI'S FORCES.

ALEXANDRIA, August 23.—Arabia has 25,000 men and 60 guns at Tel-el-Kebir. The Seventh native infantry have been ordered to Serapeum from Suez.

ISMAILIA, August 23.—According to authentic information, Arabi has 25,000 men at Kafr-el-Dwar. Large numbers of men are constantly entrenching at Tel-el-Kebir, and there is little doubt that the big fight of the war will occur there.

The prisoners taken at Serapeum on Monday report that many of the enemy's wounded died during the retreat across the desert to Tel-el-Kebir.

NO FIGHT.

The report of the fighting at Serapeum has been contradicted.

THE ENEMY'S SIGNALS.

The *News'* Alexandria despatch says that the system of signals between Arabi's camp and Alexandria has been discovered.

THE SUEZ CANAL.

KANTARA, August 23.—The British forces now hold the Suez Canal throughout the entire length, and have abundance of good water.

MADE PRISONERS.

PORT SAID, August 23.—The British have captured Kuchdi Pasha, formerly the Khedive's Minister of Finance, and Seulikar Pasha, of the Khedive's household, who espoused the cause of Arabi. The military police have arrested 19 Greeks who were pillaging the Arab quarter.

ISMAILIA, August 23.—Ten of the prisoners have been shot.

BRITISH TROOPS MOVING FORWARD.

ISMAILIA, August 23.—The troops now at Nefisch, with the addition of three squadrons of the Household Cavalry, two guns, a detachment of Hussars and mounted infantry will march in the morning to El Magfar, on the Freshwater Canal, about four miles west of Nefisch, leaving one regiment there to guard the bridge over the canal.

BALLOONS WANTED.

ALEXANDRIA, August 24.—While Arabi's Generals know exactly our movements, we are ignorant of theirs. The absence of balloons is much felt here. There is no place where they would be more useful.

THE BRITISH LINES.

The London *Telegraph's* Ismailia special says:—The enemy are reported in force ten miles off. Occasionally they attack our pickets, but retire directly we advance. Our line extends over a mile and a half beyond Ismailia, with advanced pickets of the different infantry and cavalry corps. The Duke of Connaught, with a brigade of Guards, is stationed on the left of Ismailia. The water supply continues to diminish. What we have is very bad. Five men were sunstruck while marching to Nefisch. Our cavalry are moving towards Mahagamah *via* Nefisch, where they will wait the arrival of General Wolseley. They have three guns accompanying them. The railway to Nefisch has been completed. The infantry will remain here till further orders. Prince Teck will proceed with Sir Garnet Wolseley.

EVIDENTLY NOT WANTED.

ALEXANDRIA, August 24.—Some ladies in England propose starting for Egypt to relieve the native poor here and elsewhere. There are no such people here. The natives here are the lowest class and are enriched with plunder. Respectable natives are not allowed to enter the city. When the difficulties are settled, they will return to a quarter of the town quite uninjured, and the necessity for rebuilding the European quarter, with the increased demand for all sorts of labor, will considerably raise wages, and probably place natives in more flourishing circumstances than they have been for the last ten years.

MUSSULMAN SYMPATHY FOR ARABI.

CONSTANTINOPLE, August 24.—Among uneducated Mussulmans sympathy for Arabi is undiminished, but among those capable of distinguishing between the political and the sentimental aspects of the question, there is a decided revulsion of feeling. Some who formerly applauded Arabi now condemn him as a dangerous enemy of the Empire.

THE PROTESTING PORTE.

CONSTANTINOPLE, Aug. 24.—The Porte has addressed a protest to Lord Dufferin in regard to the interruption of telegraphic communication with Egypt, the Porte being unable to communicate with its officers at the Khedive's palace.

THE INFATUATED TURK.

CONSTANTINOPLE, August 25.—The Turkish delegates to the Conference yesterday advanced fresh demands relative to the military convention with England, to the effect that the Turks should land at Alexandria, and the proclamation relative to Arabi, instead of declaring him a rebel, should summon him to submit to the Khedive.

ARABI TURNING ON DE LESSEPS.

ALEXANDRIA, Aug. 25.—It is rumored that Arabi accuses M. DeLesseps of having deceived him with false promises, so as to be able to sell the Suez Canal to the English, and that he has set a price on DeLesseps' head.

A BATTLE AT MAGFAR.

LONDON, Aug. 25.—Sir Garnet Wolseley, in a despatch to the War Office, recounts an engagement at Magfar on Thursday, in which he held his ground the whole day against 10,000 Egyptians. His force numbered about 2,000 men. Sir Garnet Wolseley says:—"I advanced this morning before daybreak, with the Household Cavalry, two Horse Artillery guns, thirty mounted infantry, one thousand men from the York and Lancaster regiments and marines. After some skirmishing, I took possession of the dam which the enemy had constructed across the canal, between the villages of Magfar and Mahuta. During the operations two squadrons of the Household Cavalry charged the enemy's broken infantry very gallantly. I soon found the enemy being largely reinforced from Tel-el-Kebir. I could see trains arriving. I thought it quite inconsistent with our traditions for the Queen's army to retire before any number of Egyptian troops, so decided to hold the ground until reinforcements arrived. All day long I held the Egyptian force of ten thousand men, with ten guns, in my front and right flank. The precision of the enemy's artillery fire was good, but they fired common shell nearly all day, and when they did fire shrapnel their fuses were badly adjusted. The enemy had their cavalry regiments in line. Our horses, having been recently on board ship, were not in condition to gallop much. The two Horse Artillery guns were served with pluck and ability. Our casualties have been slight. Captain Hallam Parr was wounded in the leg. Lord Melgund received a wound through the hand. Captain Parr's Mounted Infantry distinguished themselves. All the troops engaged did well. To-morrow (Friday) I shall attack the enemy's position at Holenekee and take possession of the dam they constructed there this morning."

THE POSITION AT MAHUTTA.

A telegram despatched at two o'clock this morning by General Wolseley adds: "I omitted to say I had with me yesterday two Gatling guns, worked by seamen, who did their duty admirably. I pushed on again this morning at daybreak. The enemy had a strongly entrenched position at Mahuta, and from the bold way they attacked us yesterday, I hoped they would stand their ground to-day. They withdrew their guns, however, last night. My plan was to halt on my left at the dam taken yesterday, swing round my right to take the enemy's position in flank, drive them into the fresh water canal, sending the cavalry completely around their position to occupy the railway in their rear, and capture their engines and rolling stock. General Lowe attacked the rear of the enemy, routing them with considerable loss, taking five Krupp guns, seventy-five railway carriages laden with provisions, a large quantity of ammunition and rifles. I intend to-morrow to occupy Kassasin lock on the Freshwater Canal. Its position will secure a safe passage across the desert lying between Ismailia and the cultivated land of the Delta. The losses yesterday were five killed and fourteen wounded. Admiral Seymour has organized a boat service along the canal, which we shall depend upon for supplies until the locomotives get to work.

THE FRESHWATER CANAL.

LONDON, August 25.—Sir Garnet Wolseley, telegraphing to the War Office from Ismailia on Thursday, says: "The water in the Freshwater Canal has been falling during the last three days. I thought it necessary, although I had possession of Serapeum, to push forward to occupy a point on the canal seven miles west of Ismailia, where I had been warned the canal could be most damaged.

RAMSAH ABANDONED.

ISMAILIA, Aug. 25.—The enemy have turned out of their strong position near Ramsah station, and retreated, leaving the camp behind them. They took some guns with them.

ABOUKIR AND LAKE MARROTIS.

ALEXANDRIA, August 25.—On the enemy's left 500 men have been working the whole afternoon upon the new entrenchments across the sands between the railway embankment and Lake Marcotis. His flank is now covered by the entrenchments to Lake Marcotis on one side and Lake Aboukir on the other. There is reason to believe that the Egyptians have mounted a gun on the railway track. A large new camp has been observed south of Lake Marcotis. It probably contains reinforcements from Tripoli.

RECONNAISSANCE AT FORT GHEMILEH.

ISMAILIA, Aug. 25.—The English made a reconnaissance on the 24th instant toward Fort Ghemileh, which they found to be still garrisoned by Arabi.

CAPTURE OF DAMIETTA.

Damietta has been captured. The sanitary agent of the English Government, a post-office official, and two priests, were found there. They have been loaded with chains for the last six weeks, and subjected to most terrible cruelties.

POISONED BY ARABI.

Deserters from Arabi's forces state that Hanf Pasha has been poisoned for disputing with Arabi.

STARVED OUT.

ALEXANDRIA, August 25.—It is stated that four Bedouins, captured by the English, report that they had been employed at Kafr-el-Dwar and Aboukir under their Sheikh, and fled from Arabi from want of food.

ALL QUIET IN CAIRO.

ALEXANDRIA, August 25.—Cairo is still quiet. The committee of vigilance sits daily. All members of the committee support Arabi except Butros Bey, ex-sub-Minister of Justice, and Latif Bey, one of the leaders of the first *emeute* against the Nubar-Wilson Ministry.

AIDING THE REBELS.

PORT SAID, August 25.—It is stated that some of the principal Arab merchants at Port Said and Damietta have contributed money toward the cause of the rebels. Five hundred horses have been sent them from Damietta. Wild stories are still being circulated among the natives of Arabi's great successes.

NO DISORDER IN SYRIA.

CONSTANTINOPLE, August 25.—The Porte has formally denied the report of the murder of Christians at Beyrout and other recent rumors of disorder in Syria.

THE MILITARY CONVENTION.

CONSTANTINOPLE, August 25.—Count Nelidoff, Russian Ambassador here, finding it impossible, in face of the decided attitude of Lord Dufferin, to get the stipulation of the Military Convention between Turkey and England examined, and, if necessary, modified by the Conference, is now endeavoring to have the document officially communicated to the Conference as soon as it is signed. At the same time he wishes to extract from Great Britain a formal declaration that she will seek no exclusive advantage in Egypt, and will submit a final solution of the question to the decision of Europe. Count Nelidoff has already obtained the support to his effort of at least one of his colleagues.

CONSTANTINOPLE, August 25.—Lord Dufferin to-day informed Said Pasha and Ismail Pasha that his Government, yielding to the objections of the Sultan, were prepared to demand that any movement of Turkish troops must be first approved by the British. Lord Dufferin therefore proposed that the English and Turkish commanders should first deliberate together. If the English general should not approve of the proposed operations, the Turkish commander would still be at liberty to carry them out. Said Pasha urged that the landing of Turkish troops at Alexandria was indispensable for the future combined action of the two armies. He suggested that Turkey would make Alexandria, which the English would evacuate, their base of operations, while the British base would be Ismailia. As far as regards military affairs, this is the only point of difference between Lord Dufferin and the Porte.

ALEXANDRIA, August 25.—All orders not to allow the disembarkation in Egypt of Turkish troops without the previous signature of the military convention and the issue of a proclamation against Arabi, remain uncancelled.

TREACHERY FEARED.

ALEXANDRIA, Aug. 26.—It is stated that two thousand Albanians have been enlisted for service in Egypt, in quarantine and other departments as it is feared the native troops cannot be trusted. Troops are urgently required at the quarantine station at Moses Wells near Suez, as the attitude of the Bedouins there is threatening. A blockade of the Egyptian coast was established yesterday.

THE MECCA PILGRIMS.

CONSTANTINOPLE, Aug. 26.—Lord Dufferin has promised that pilgrims to Mecca be permitted to traverse the Suez Canal as usual.

RELEASED.

ALEXANDRIA, August 26.—The Austrian boat's crew of the frigate "Nautilus" captured by the Egyptians, have been liberated and have arrived here.

TIRED OF ARABI ALREADY.

ALEXANDRIA, August 26.—Tunisian merchants who escaped from Kafr el Dwar report the country thoroughly discontented with Arabi and anxious for peace.

THURSDAY'S FIGHT DESCRIBED.

ISMAILIA, August 26.—The enemy's loss in the fighting on Thursday with Gen. Wolseley is estimated as high as 400. The very first shell fired by the enemy on Thursday passed a few feet over Gen. Wolseley's head and took off the leg of a horse ten yards behind. The enemy throughout the fight declined to come to close quarters. The two gunners killed were struck down by a shrapnel near Gen. Wolseley's position. The troops behaved well. They were all day without water or food. After marching ten miles through the heavy sand the enemy's cavalry swept around the British right flank, but did not come within striking distance. The Egyptian fire was too hot for the Life Guards to cross the open toward them. The British Infantry passed a day lying down behind the banks and in the ditches. After the engagement on Thursday Gen. Wolseley rode into Ismailia and returned late in the evening. Reinforcements arrived during the night, but the guns not until early next morning, having had great difficulty getting through the sand. At daylight it was found, to the disappointment of the British main body, that the enemy had withdrawn. The Egyptian artillery fought well and fired much more accurately than at Kafr El Dwar. The infantry were contemptible and the cavalry little better. Many of both those arms were observed breaking from the ranks, dispersing under the fire of the shells.

ALL TO THE FRONT.

ISMAILIA, Aug. 26.—All the troops, except the Irish Fusiliers and three batteries of artillery, have gone to the front.

THE FIGHT AT MAGFAR.

ISMAILIA, Aug. 26.—At the outset of the fight we were under very heavy fire, especially from the Egyptian left, where ten guns rained shells incessantly. The Eighty-fourth moved in this direction in skirmishing order. As the men were scattered, the losses were slight. Finding that they were doing little harm the enemy directed their attention on Gen. Wolseley's staff. The enemy played freely upon the Household Cavalry. The hopes entertained of the usefulness and bravery of the latter were fully realized. Two Gatling guns, served by marines, were unable to go into action on account of the severity of the enemy's artillery fire. The fighting began at 6 o'clock a.m. and did not end until evening. Our cavalry charged the enemy early in the morning over heavy ground, forcing them to retire, leaving ten prisoners in our hands. Toward mid-day the enemy got our range more completely and landed shells right in our midst. By noon the heat was so intense that many of our men were attacked with dysentery and sunstroke. In the second day's fight the dragoons charged the enemy and knocked down many, taking some prisoners. One Guardsman was dangerously wounded by an Arab under cover, but rode him down and killed him. Major Bibby was shot through the chest, but rode a considerable distance afterward. The headquarters will probably remain at Abu Pisheh for the present, to enable the stores to come up. The prisoners state that many dead and wounded were taken away by the train which our cavalry nearly captured.

ISMAILIA, August 27.—Only six dead Arabs were found on the field of battle, but inside Rameses were found several small pyramids of stones freshly erected, beneath which the dead natives were probably buried. Though the engagement was not serious as regards hard fighting, the soldiers acted splendidly. Sir Garnet Wolseley's object has been achieved, and we have gained more fresh water. The canal has been carefully dammed at Ramesse. We lost a good many horses and mules. The remainder [illegible] has been repaired as far as Rameses. The native cavalry has arrived and gone to the front.

ISMAILIA, August 28.—When the mounted infantry and household troops charged into Mahsameh, the enemy dashed into the lake and swam for safety. They were piled with our rifle bullets as they dived and floundered.

LONDON, August 27.—The *Times* publishes a sensational telegram concerning the engagements preceding the occupation of Ramses on Friday. The place was doubtless occupied without opposition.

ARRIVAL OF LOCOMOTIVES.

ISMAILIA, August 26.—An engine with nine trucks arrived to-day from Suez. The line in fact is in working order. The rebel position at Tel el Kebir is very strong. There is an entrenchment right across and on both sides: the railway position is flanked on each side by water. Our losses on Friday were about 50 killed and wounded, of which the cavalry lost 20 or 30 from its heavy shell fire and charging a square of infantry. Our total force in Ismailia district under Gen. Wolseley are about about 11,000 men, 2,500 horses and 7 guns.

OCCUPATION OF RAMSEH AND MAHSAWEH.

ISMAILIA, August 26.—Ramseh and Birket el Mahsaweh were occupied yesterday by the British. Losses small on both sides. The enemy retreated to Lake Maxina. Men and horses are suffering from the heat. The transport service is insufficient.

ROGUS PEASANTS.

The Life Guards captured eight prisoners disguised as peasants but carrying arms. Six had Remington rifles. The enemy's scouts displayed great boldness. The enemy were much stronger than the British expected. They had cavalry and were spread out in a semi-circle. Train after train of reinforcements were seen arriving. At first the British fire was weakly responded to, but in the afternoon the rebels threw six shots to the British one. Their shots produced very little effect.

ALL QUIET AT THE FRONT.

ISMAILIA, August 28.—All is quiet at the front. The British cavalry has advanced to Kassassin Lock.

TURKISH TROOPS LANDING AT PORT SAID.

PORT SAID, August 28.—The steamer Calypso arrived on Saturday with Turkish troops, and moored inside the inner harbor, when the Monarch sent two armed boats covered with a Gatling gun, to learn their object. The Turks stated that they were a relief for the Turkish garrison at Comfort, in the Red Sea. During the night armed boats from the British fleet cruised around and saw the Turks landing. The Calypso entered the canal on Sunday morning. A steam pinnace from the Hecla accompanied her, with orders to prevent the disembarkation of troops.

A TUSSLE WITH THE BEDOUINS.

ALEXANDRIA, August 27.—At Meks this afternoon the Bedouins appeared in large force within a short distance of the forts, where the Malta volunteers had been relieved by the Derbyshire Regiment. After considerable firing on both sides, the Bedouins retired. Their casualties were not ascertained, but it is believed many Bedouins were killed and a large number wounded. Our loss is one killed and one wounded. It is rumored that the Bedouins will attempt to enter the town to-night at the Gabari gates. The barracks have been prepared accordingly.

SHELLING THE OUTPOSTS.

ALEXANDRIA, August 27.—This afternoon two heavy guns, recently placed beyond the Water Works Hill, opened fire on the enemy on the left bank of the Mahmoudieh Canal. Twenty rounds were fired. Several shells exploded in the midst of the enemy's entrenchments, causing considerable damage. The enemy replied feebly. Subsequently a conflagration was observed in the rear of the enemy's camp beyond Ramleh.

The ironclad "Minotaur" shelled the enemy's outposts in the direction of Aboukir this afternoon. The shells appeared to burst in the midst of the enemy's position. The "Minotaur" fired with increased rapidity until sunset. The enemy's reply was weak, and there was very little activity in the rebel lines. The impression is growing that the bulk of Arabi's men have withdrawn from Kafr-el-Dwar.

A SPY'S FATE.

ALEXANDRIA, Aug. 27.—A spy was captured and handed over to the native authorities, who tortured him with thumb screws, and ordered him to be shot. He said Arabi has only a strong regiment of artillery, 2,000 cavalry and a few infantry in front of us. Signalling has been proceeding during the past few nights with Arabi, but we have been unable to discover those signalling.

THE RATS DESERTING THE SINKING SHIP.

ALEXANDRIA, August 27.—It is reported that several staff officers have deserted Arabi, and given Sir Garnet Wolseley important information.

ALEXANDRIA, August 27.—Abdel Rassek and four other staff officers have escaped from Arabi. They were well received by the Khedive. It appears that they had been some time in communication with the Khedive through members of General Stone's family. They were entrusted by Arabi with the defence of Tel-el-Kebir, but abstained from making earthworks. They escaped and went to M. DeLesseps, and asked assistance to get away. M. DeLesseps, tried to dissuade them, accusing them of want of patriotism, and finally sought Admiral Hoskins, who forwarded them to Alexandria.

MOVEMENTS OF THE ENEMY.

ALEXANDRIA, Aug. 26.—Large numbers of Egyptians are entrenching southward of Meks, apparently with the object of preventing a flank movement by the British. A reconnaissance was made last evening in that direction. The enemy withdrew through the shallow parts of Lake Marcotis.

Two battalions of the enemy's infantry withdrew yesterday from Aboukir, to occupy the isthmus between Lake Aboukir and Lake Edko. This is an important position, as if Aboukir is once captured, Kafr-el-Dwar could be turned by a force traversing the isthmus.

MURDERER ARRESTED.

A native who murdered the Manchester merchants Richardson and Dobson and three other persons on the 11th June, has been arrested.

ARABI'S ARMORED TRAIN.

ALEXANDRIA, Aug. 26.—Arabi's armored train left the enemy's position at King Osman this evening and advanced 5,000 yards, when two heavy guns on the Water Works Hill fired five rounds against the train. One shell fell in the enemy's trenches. The train retired without replying.

THE COTTON CROP.

Advices from the interior represent the cotton crops as having suffered considerably owing to the want of irrigation.

THE MILITARY CONVENTION.

CONSTANTINOPLE, August 27.—Said Pasha went to Therapia this (Sunday) evening and informed Lord Dufferin that the Turkish Council of Ministers had resolved to publish a proclamation against Arabi, and accept the military convention with England, conformably to Lord Dufferin's proposals.

(*Continued on 5th Page.*)

A SUMMER DAY-DREAM.

Here, where I lie in rest outspread
  With mossy carpet girt around,
The great trees green above my head,
  And flowers bespangle all the ground.

Low drowsy murmurs go and come
  Among the spikelets of the pines
Close by I hear the wild bees hum
  'Mid strawberry and arbutus vines.

Above my head the woodpecker
  Drives coffin nails in giant boles;
And all the maples are astir
  With clear-pitched notes of orioles.

And somewhere near, I know not where,
  But, like the voices of a dream,
Far off, yet near, the hazy air
  Shakes with the laughter of a stream;

A little noisy rill, that brawls
  In mimic cataracts through the woods,
And whirls its pebbles over falls
  Of inches into inch-deep floods.

I cannot see it, but the ear
  Can track its thousand fantasies,
Now rippling on distinct and clear,
  Now loud with petulant little cries;

I know that, as it flows along
  With dancing sand-specks in its train,
Some stone has jarred upon its song,
  And turned its gold-motes back again:

And there it thrusts, and pants, and raves,
  (As we too rave o'er little woes),
Till myriad foam-drops fleck its waves
  And gather, whirling, round its throes.

[illegible]
  A crash along its water-ways,
And all its rage and agony
  Are drowned in songs of peace and praise.

....There comes a butterfly and flits
  To yonder fern-top's dizzy height,
Folds for a while his wings, and sits,
  Then shakes them, quivering, in the light;

And dallies with the sunbeam's kiss,
  And shuts his wings, and opes again,
In such great ecstasy of bliss
  It almost seems a throb of pain

So fair! so frail! so weak! so strong
  For happiness in little things!
So mute! yet e'en the voice of song
  Sounds poor, by those wing-quiverings.

Hither and thither, in and out
  Amid the wilderness of grass,
The little ants, a busy rout,
  In never-ending concourse pass.

And as I watched them hurrying by
  With eager footsteps to and fro,
I seem to wonder lazily
  What mighty passion moves them so.

Not love, nor anger; each alone
  Pursues his independent way;
None gather by some corner stone
  To pass in scandal half the day.

Nor see I in the varying throng
  That passes and repasses by,
Some portly insect pace along,
  Slow-stepped, in wealth's own dignity.

Some aim directs the zigzagged ways
  Of all the insect multitude;
Some business that allows no stays,
  Some pleasure eagerly pursued.

And yet, methinks their rush of feet
  Is with a stronger passion rife,
And through their slender pulses beat
  The dancings of the joy of life.

In secret haunts of sweet perfume
  To work or play the hours away,
Companions of a world of bloom,
  And flower-shaded from the day.

To feel the tangled grasses stirred
  With the cool breeze's soft caress,
And hear, high up, the brooding bird,
  Croon little notes of tenderness.

And 'mid such scenes as these to take
  And do their work, however small,
For Him who made ant, flower and brake,
  And loves the service of them all.

And as in deepest sympathy
  With all this little world I lie,
The same strange spell comes too on me,
  And pierces me with ecstasy

So great, that when I fain would seek
  For words, they loom up faint and dim;
And well I ween them all too weak
  For simplest notes of Life's glad hymn.

O Lord, omnipotent! how just,
  How strong in love are all Thy ways,
Who peoplest e'en a grain of dust,
  And from such worlds perfectest praise!

J. J. PROCTER.

BLIND MEN OF JERICHO.

In view of the innumerable cases of blindness in the East, there is only ludicrousness in the many critical attempts which have been made to reconcile the several narratives in the Synoptical Gospels, of the healing of the blind men by our Lord, on the occasion of his last visit to Jericho. Luke says, that as Jesus went into Jericho, a blind man called on him for mercy, and was cured. Mark says that a blind man known as Bartimæus, called out and was cured, as Jesus was leaving Jericho. Matthew says that as Jesus was leaving from Jericho, two blind men sitting by the wayside called for mercy and were cured. And what a fuss has been made over these several statements, as if the very integrity of the Gospel revelation was involved in their harmonizing! Was there one blind man, or were there two or could there have been three, at the same time near Jericho? Was it when he went into, or when he came out from the city, that Jesus heard the cry of the one blind man, or of the two? Or, is it possible that one blind man cried out for help without securing it, as Jesus went into the city; and that a second blind man having joined the first before Jesus came out, both then cried for mercy, and both received their sight? Or, were there two Jerichos, and this happened between them? Canon Farrar refers to "the fourteen or fifteen proposed ways of harmonizing the discrepancies." What nonsense! Why, whenever you enter any city or any village in the East, you are likely to find one blind man on one side of the way, and two blind men on the other side of the way, and all three of them are sure to call on you for help. And when you go out of that place you will probably find first two blind men, and then one blind man, and then two blind men more, all of them calling on you to show mercy to them in the name of God. It is the most natural thing in the world to believe that our Lord cured one blind man as he went into Jericho, and two or three as he went out. All that either of the Evangelists reports in this line is to be taken as the literal truth, eminently reasonable in the present state of things in the Land of our Lord—as illustrative of the state of things in the days of his mission there.—*J. K. Turnbull in Sunday School Times.*

SUNDAY-SCHOOL LESSON.

CALAMITIES FORETOLD.

September 10.—**Mark** 13: 1-20.

REVISED VERSION.

And as he went forth out of the temple, one of his disciples saith unto him, Master, behold, what manner of stones and what manner of buildings! And Jesus said unto him, Seest thou these great buildings? there shall not be left here one stone upon another, which shall not be thrown down.

And as he sat on the mount of Olives over against the temple, Peter and James and John and Andrew asked him privately, Tell us, when shall these things be? and what shall be the sign when these things are all about to be accomplished? And Jesus began to say unto them, Take heed that no man lead you astray. Many shall come in my name, saying, I am he; and shall lead many astray. And when ye shall hear of wars and rumors of wars, be not troubled: these things must needs come to pass; but the end is not yet. For nation shall rise against nation, and kingdom against kingdom: there shall be earthquakes in divers places; there shall be famines: these things are the beginning of travail.

But take ye heed to yourselves: for they shall deliver you up to councils: and in synagogues shall ye be beaten; and before governors and kings shall ye stand for my sake, for a testimony unto them. And the gospel must first be preached unto all the nations. And when they lead you to judgment, and deliver you up, be not anxious beforehand what ye shall speak: but whatsoever shall be given you in that hour, that speak ye: for it is not ye that speak, but the Holy Ghost. And brother shall deliver up brother to death, and the father his child; and children shall rise up against parents, and cause them to be put to death. And ye shall be hated of all men for my name's sake: but he that endureth to the end, the same shall be saved.

But when ye see the abomination of desolation standing where he ought not (let him that readeth understand) then let them that are in Judea flee unto the mountains: and let him that is on the house-top not go down, nor enter in, to take anything out of his house: and let him that is in the field not return back to take his cloak. But woe unto them that are with child and to them that give suck in those days! And pray ye that it be not in the winter. For those days shall be tribulation, such as there hath not been the like from the beginning of the creation which God created until now, and never shall be. And except the Lord had shortened the days, no flesh would have been saved: but for the elect's sake, whom he chose, he shortened the days.

GOLDEN TEXT.—"A prudent man foreseeth [illegible], and hideth himself. —PROV. 22: 3.

EXPLANATORY.

I. "The signs of Christ's coming."—Vers. 1-13. 1. "As he went out of the temple; i. e., the exclusively Jewish part enclosed from the Court of the Gentiles. He never returned, and henceforth the temple was virtually desolate. —*Schaff.* "What manner of stones....what buildings." The great size of the blocks, and the massiveness and magnificence of the erections, the colonnades or porticos, gateways, and other structures, that were grouped around the inner sanctuary, riveted the disciple's attention, and evoked his admiration. No wonder. The Temple of Jerusalem was one of the wonders of the world. Josephus, in his Antiquities (xv. 11, 3), speaks of the stones of a certain part of the edifice, as being "each, in length, 25 cubits (37 to 44 feet); in height, 8 (12 to 14 feet); in breadth, about 12 (18 to 21 feet)." In his Wars (5: 5, 6), he speaks of "some of the stones as 45 cubits in length, 5 in height, and 6 in breadth."—*Morison.* Few buildings, in ancient or modern times, have equalled in magnificence Herod's Temple. With its outbuildings it covered an area of over 19 acres, was built of white marble, was 46 years in building (John 2: 20), and employed in its construction 10,000 skilled workmen.—*Abbott.* "It was as if they thought that the loveliness and splendor of the scene would intercede with him," to save it from the ruin he had foretold two days before, on his triumphal entry.

2. "There shall not be left one stone upon another." At the time this was spoken no event was more improbable than this. The temple was vast, rich, splendid. It was the pride of the nation, and the nation was at peace. Yet in the short space of 40 years all this was exactly accomplished. Jerusalem was taken by the Roman armies, under the command of Titus, A. D. 70. The account of the siege and destruction of the city is left us by Josephus. —*Barnes.* To Jesus the sole beauty of a temple was the sincerity of its worshippers; and no gold or marble, no delicate sculpturing or votive gems, could change for him a den of robbers into a house of prayer.—*Farrar.* "That shall not be thrown down." The fortifications of Jerusalem and its natural advantages rendered it so apparently impregnable, that, after its fall, Titus, the captor, is reported by Josephus (Wars of Jews, 6: 9, 1) to have said, "It was no other than God who ejected the Jews out of these fortifications."—*Abbott.* Titus ordered the whole city and the temple to be dug up, leaving only two or three of the chief towers, so that those who visited it could hardly believe that it had ever been inhabited (Wars, vii. 1).—*Plumptre.* Of the temple proper not a vestige remains. It was built, however, upon an immense platform, partly composed of natural rock, partly of immense masonry. This platform is still standing.—*Abbott.* The remains which recent explorations have disinterred belong, all of them, to the substructure of the temple—its drains, foundations, underground passages, and the like.—*Plumptre.*

3. "Over against the temple." On leaving the Temple Jesus would descend into the valley of the Kedron, and ascend the opposite slope of the Mount of Olives. Then full in view the temple would rise with its collonades of dazzling white marble, surmounted with golden roof and pinnacles.—*Cambridge Bible.* At a distance the whole temple looked literally like a mount of snow, fretted with golden pinnacles.—*Milman.* "Peter, James, John, Andrew." The four fishermen first called, and first named in all the lists, the confidential disciples.—*Schaff.*

4. "When shall these things be?" The things of which they had heard him speak. The question is given more fully by St. Matthew (24: 3). It embraced three points: (1) the time of the destruction of the temple; (2) the sign of his coming, i. e., of his public manifestation as the Messiah: this they were momentarily expecting (Luke 19: 11. Acts 1: 6) (*Abbott*); and (3) of the end of the world. —*Maclear.*

5. "Jesus answering." He imparted only so much as was necessary to guard them against deception, to stimulate their watchfulness, and confirm their confidence that the end would come at last. Much, indeed, was at that time beyond their comprehension, and could only be made clear by the enlightening influence of the Spirit, and by the progress of events.—*Neander.* Our Lord does not answer the when but by admonitions not to be deceived. See a question similarly answered (Luke 13: 23, 24). —*Alford.* "Began to say." Began his first explanation, which probably took a wider range than they had expected.—*Schaff.* "Take heed." This is the text of this discourse, and to it Christ constantly recurs.—*Abbott.* The four moral keynotes of the discourse on the last things are "Beware," "Watch," "Endure," "Pray."—*Farrar.* "Lest any man deceive you." His purpose in this first part of his discourse is not to tell what are, but what are not, the premonitions of the great catastrophe to which he here refers.—*Alexander.*

6. "Many shall come." Five tokens are here given, to which the Lord directs the attention of his disciples: (1) the rise of false prophets; (2) wars and rumors of wars; (3) the rising of nation against nation; (4) earthquakes; (5) famines.—*Cambridge Bible.* "In my name." Pretending to be the Messiah. As the destruction of their holy city drew near, and the Messianic hopes of the Jews were at fever-heat, many enthusiasts arose, and awakened false expectations, and drew large numbers after them (Acts 5: 36, 37. 1 John 2: 18). Josephus says that in the reign of Claudius (who died A. D. 54), the land was overrun with magicians and impostors, who drew multitudes of the people into the deserts to see the signs and miracles which they promised.

7. "Wars and rumors of wars." The primary reference is to the threats of war against the Jews before the campaign which ended in the destruction of Jerusalem. During this period there were unusual commotions among the Jews in all countries, and in Rome too. It is also a prediction of unexampled convulsions before the second coming of Christ.—*Schaff.* "Be ye not troubled." (1) As if everything were going to ruin. These are part of the process of the coming, as the destruction of Jerusalem was essential to the full coming of the new kingdom. (2) Be not troubled: for you will be safe, both at the judgment and at the destruction of Jerusalem. Every Christian escaped from that destruction. (3) These things do not prove that the great catastrophe and final consummation is at hand.

8. "Nation shall rise against nation." Bear in mind the massacres at Cesarea, between Syrians and Jews, in which 20,000 of the latter fell, while in Syria almost every city was divided into two armies, which stood opposed to one another as deadly enemies: the quick succession of the five emperors in Rome within a few years, Nero, Galba, Otho, Vitellius, Vespasian, and the tumults connected therewith in wider and narrower circles.—*Van Oosterzee.* "Earthquakes." The frequency and destructiveness of the earthquakes of this period have been remarked upon by Seneca.—*Kendrick.* "Famines." A great famine, prophesied in Acts (11: 28), occurred A. D. 49, and another in the reign of Claudius, and mentioned by Josephus (Antiq. 3: 15, 3). A pestilence, A. D. 65, in a single autumn carried off 30,000 persons at Rome. "Troubles." That is, disturbances, or social perplexities and tumults—such as are the natural result of wide-spread want. Men who are pinched with hunger are apt, unless of noble character, to become desperate and reckless.—*Morison.* "Beginnings of sorrows;" of travail. Of that labor-pain of the world, out of which the kingdom of God is to be born. A figure full of the brightness of hope.—*Abbott.* The death-throes of the Jewish state precede the "regeneration" of the universal Christian church, as the death-throes of this world, the new heavens and the new earth.—*Alford.*

9. "Ye shall be brought before rulers and kings." Martyrdoms and persecutions have ever called attention to the religion of Christ, and opened ways for its promulgation.

10. "The gospel must first be published." "Among all nations." The gospel had been published through the Roman world as then known, and every nation had received its testimony before the destruction of Jerusalem. (See Col. 1: 6, 23. 2 Tim. 4: 17.) But further, the gospel has yet to be preached universally for a testimony. And the universal diffusion of it by modern Christian missions is now a leading sign of the end.—*Jacobus.*

11. "When they shall lead you" (to judgment); i. e., in fetters; or, at all events, as persons under arrest.—*Morison.* "Take no thought beforehand." (Be not anxious," as in the New Version.) This verse is best interpreted by such practical illustrations as are afforded by Acts 4: 19, 20; 5: 20-32; and especially Dan. 3: 16-18. The words indicate an almost tender sympathy with the feelings of Galilean disciples, "unlearned and ignorant men," standing before those who were counted so much their superiors in power and knowledge.—*Plumptre.* "Whatsoever shall be given you...speak ye." Not only what they should say, but how; in what form and phrase to say it, should be given in that hour.—*Plumptre.* "Not ye,...the Holy Ghost." The promise is from our Lord himself; but in this passage the power is attributed to "the Holy Ghost;" and in Matt. 10: 20, "to the spirit of your Father."—*Riddle.* God gave them power; and they spake with a wisdom, fearlessness, pungency, and ability, which no other men have ever manifested—full proof that these illiterate fishermen were under the influence of the Holy Ghost.—*Barnes.* Many besides the apostles have had experience of this high assistance, and have been themselves amazed at the aptness of the ideas and words that were flashed, as occasion required, into their minds.—*Morison.*

12. "Brother....betray the brother,.... father the son." In missionary lands this is literally fulfilled to-day, as we all know."

13. "Hated of all men." The Roman historian Tacitus speaks of the early Christians as a hated race. It is difficult for us in these days to understand how literally this was fulfilled. The most shameful practices were attributed to Christians; and partly in consequence of these falsehoods, partly from hatred of good, they were treated as the offscouring of the earth. Perhaps something like this may occur again. But this need not discourage. While thus hated, Christians won their greatest victories. Now, as then, the world often hates most what it is forced to respect and even to admire.—*Riddle.* "For my name's sake." Because of your love and service to me. Good men are continually hated because they are Christ's, and are advocating his laws and truths against the practices of bad men. "Endure unto the end." The endurance here spoken of is the brave and persistent endurance of the Christian in faith and love. In this noble word "patience," the "queen of virtues," as Chrysostom does not fear to call it, there always appears in the New Testament a background of manliness.—*Ellicott.*

II. "Immediate Tokens of the Downfall of Jerusalem."—Vers. 14-20. The prominent reference in these verses is to the destruction of Jerusalem. Another fulfilment is probable. But precisely because the details are so minute, we must be cautious in applying it to the final catastrophe.—*Schaff.*

14. "When ye shall see." He now gives them tokens which should forewarn them of the approaching destruction, and tells them how they may secure their own safety.—*Maclear.* "The abomination of desolation;" i. e., the abomination that makes desolate, "the act of sacrilege which is a sign and a cause of desolation."*Cambridge Bible.* The Roman army is here called an abomination (Luke 21: 20) because upon its standards were depicted the images of their emperor and the tutelary gods whom they worshipped; and idols were held by the Jews in the utmost abhorrence, and called by the very name here used, "an abomination." The word "desolation" is added because this mighty army brought ruin and desolation on Jerusalem.—*Porteus.* "Daniel the prophet." These words should be omitted here, as in the New Version, though they are rightly retained in Matthew. The words are thrice used in Daniel, 9: 27; 11: 31; 12: 11. "Standing where it ought not." Matthew, "In the holy place,"—either the temple, or Jerusalem, the holy city. This city, and the mountain on which it stood, and a circuit of several furlongs around it, were accounted holy ground.—*Porteus.* "Let him that readeth." This is generally regarded as an admonition of the Evangelist, added to emphasize Christ's warning.—*Abbott.* "Understand." Let him know that this is the fulfilment. "Them (the disciples) that be in Judea...flee to the mountains," or highlands of the interior. The full force of this exhortation cannot be perceived except by viewing it in contrast with the former part of the discourse, in which he accumulates what seem to be sufficient causes of alarm and flight, but only to forbid them. Though thousands should appear professing to be Christ; though every nation in the world should be involved in war; though all the ties of nature should be broken; and though men should hate me so as to persecute you purely on my account—no matter, remain quiet: "in your patience possess ye your souls" (Luke 21: 19). These are fearful evils, and will lead to dreadful sufferings; but they are not signs of my appearing. But when you see a heathen host triumphant upon sacred ground, then flee from Judea, for a great catastrophe is then at hand.—*Alexander.* There was abundant time, after the first approach of the Roman armies, for the Christians to flee. Her desolation did not then begin, but was at hand.—*Schaff.* Full two years before the final investment of the city, Cestius Gallus marched a Roman army upon the city, and commenced its siege. If he had continued a little longer, he would have taken it; but he suddenly removed his army without apparent reason, thus giving the Christians a chance to escape.—*P.* The Christians, warned by the sign, and, according to the Church historian Eusebius, also by a direct divine intimation, obeyed the Lord's injunction, and fled to Pella, one of the cities of Decapolis, which continued for fifty years to be the seat of the "Church of Jerusalem." And the tradition has always been accepted, that not one of the despised "sect of the Nazarenes" perished in the siege.—*Stock.*

15. "Him that is on the housetop." The flat roofs of Eastern dwellings were a favorite place of resort.—*Schaff.* It is said that one may run from one part of Jerusalem to another, and even to the city gates, along these flat roofs of the houses.—*Abbott.* "Not go down into the house." The stairway is often outside the house, but within the court. The urgency of the flight recommended by our Lord is enhanced by the fact that the stairs do lead down into the court or lewan. He in effect says, "Though you must pass by the very door of your room, do not enter; escape for your life."—*Thomson.*

16. "Not turn back . . . take up his garment," or cloak. This was an outer garment, but the almost necessary accompaniment of every Jewish traveller. It was thrown off or left at home during work, but was used at night as a wrapper, and would seem to the disciples almost indispensable in such flight. But they were not to turn back, even for so important an article. The exigency would be too urgent, the peril too great.—*Abbott.*

17. "Woe (will be) to them . . . . with child." In consequence of the aggravated suffering which those conditions would involve.—*J. F. and B.*—The Saviour's heart was more tender than a woman's, and bled when he thought of the anguish that would, in many cases, be inevitable in the hasty flight.

18. "Your flight be not in the winter." Making escape perilous, or tempting you to delay your flight. Matthew (24: 20) adds, "neither on the sabbath day," when, from fear of a breach of its sacred rest, they may be induced to remain. We may well believe that the Christians made both these petitions theirs, and their prayers were answered. (*a*) The compassing of the city by the Roman armies spoken of by St. Luke (21: 20) took place at the commencement of October, A. D. 66, when the weather was yet mild and favorable for travelling. (*b*) The final siege, if any Christian Jews lingered on till then, took place in the still more open months of April or May.—*Cambridge Bible.*

19. "In those days shall be affliction, etc. Josephus declares that "the misfortunes of all men, from the beginning of the world, if they be compared to those of the Jews, are not so terrible as their were," "nor did any age ever produce a generation more fruitful of wickedness from the beginning of the world." The horrors of war and sedition, of famine and pestilence, were such as exceeded all example or conception. The city was densely crowded by the multitudes which had come up to the passover. Pestilence ensued, and famine followed. The commonest instincts of humanity were forgotten. Acts of violence and cruelty were perpetrated without compunction or remorse, and barbarities enacted which cannot be described. Mothers snatched the food from the mouths of their husbands and children, and one actually killed, roasted, and devoured her infant son. (Compare Lev. 26: 29. Deut. 28: 56, 57.) The besieged devoured even the filth of the streets; and so excessive was the stench, that it was necessary to hurl 600,000 corpses over the wall, while 97,000 captives were taken during the war, and more than 1,100,000 perished in the siege.—*Cambridge Bible.* Five hundred every day were, by the command of Titus, crucified on the walls around the city. The multitude of executions was so great that room was wanting for the crosses, and crosses for the bodies.—*Thomas.*

20. "Had shortened those days;" i. e., the days of the siege of the Roman army. Had the horrors within and without which accompanied the siege of Jerusalem been prolonged, the utter desolation of the country would have been the result. But in mercy they were shortened, (1) by the swift and energetic measures of the invading armies, and (2) by the infatuation of the besieged. On his part Titus encircled the city with a wall five miles in extent, and fortified it with thirteen strong garrisons in the almost incredibly short space of three days, and Josephus makes special mention of his eagerness to bring the siege to an end. On the other hand, the leaders of the factions within slew the men who would have taught them how the siege might be prolonged, burnt the corn which would have enabled them to hold out against the enemy, and abandoned the towers, which were in reality impregnable. Thus the city, which in the time of Zedekiah (2 Kings 25: 1-6. Jer. 39: 1, 2) had resisted the forces of Nebuchadnezzar for sixteen months, was taken by the Romans in less than five.—*Cambridge Bible.* "No flesh should be saved." No flesh, that is, none of the Jews. There would have been an almost total extermination of the race, so exasperated were the Romans, and so fitted were they by their victories to carry this exasperation into fatal effect.—*Morison.* "The elect's (chosen) sake." The motive that moved the will of "the Lord" is revealed. He has a special regard to the elect "in Christ;" and hence, that they might not be extirpated, he overrulingly curtailed the days of tribulation.—*Morison.* This is not only an illustration of the power of prayer, but of the indirect gain to the world of the presence in it of the Church as a conserving element. —*Bengel.*

All these things came upon the Jews because they rejected Christ. Had they received him as the Messiah, they would not have aroused the opposition of the Roman Empire as they did. They would have been united, and able to defy all attacks; and God would have preserved them. Those who did escape did so by an obedient faith, believing these warnings of Christ, taking note of the sign he gave them, and fleeing from the city.—*Condensed from Peloubet's Select Notes.*

"STOP BEFORE YOU BEGIN."

Success depends as much on not doing as upon doing, in other words, "Stop before you begin," has saved many a boy from ruin.

When quite a young lad I came very near losing my own life and that of my mother by the horse I was driving running violently down a steep hill and over a dilapidated bridge at its foot.

As the boards of the old bridge flew up behind us, it seemed almost miraculous that we were not precipitated into the stream beneath and drowned. Arriving home and relating our narrow escape to my father, he sternly said to me—

"Another time hold in your horse before you start."

How many young men would have been saved if in early life they had said, when invited to take the first step in wrong-doing, "No I thank you."

If John, at that time a clerk in the office, had only said to one of the elder clerks when invited to spend an evening in a drinking place said, "No, I thank you," he would not to-day be an inmate of an inebriate asylum.

If James, a clerk in another office, when invited to spend his next Sabbath on a steam-boat excursion, had said, "No, I thank you," he might to-day have been in an honored office in society, instead of occupying a cell in prison.

Had William, when at school, said when his comrade suggested to him that he write his own excuses for absence from school and sign his father's name, "No, I thank you; I will not add lying to wrong-doing," he would not to-day be serving out a term of years in prison for having committed forgery.

Tampering with evil is always dangerous. "Avoid the beginning of evil," is an excellent motto for every boy starting out in life.—*Band of Hope Review.*

"INDOLENCE is the worst enemy," says Bishop Huntington, "that the church has to encounter. Men sleep around her altar. Life has no significance, eternity no awfulness, enjoyment no obligations, bereavement no solemnity, suffering no prophetic suggestions of an hereafter, holiness no enrapturing beauty; but they stretch on beds of ease and sleep amid the most stirring revelations of Providence. When the church *lives* and holds the truth of Christ, not as the mortuary of a buried benefactor, but as a present inspirations, it never will suffer its members to sit idly with folded hands, looking lazily out on white fields of harvest, where no reaper's sickle rings against the wheat, but send them forth to work with an impulse that no disappointment can palsy, no misgivings keep back.

CHILDREN'S CORNER.

SAY'S LIGHT.

BY KATE SUMMER GATES.

Miss Winthrop was in the habit of giving her class a verse each Sunday for the week's motto. This week it was, "Let your light so shine that men may see your good works, and glorify your Father which is in heaven." "Will you try this week, girls, to let your light shine? —will you Say?" she asked turning to Say Willis.

"I'd like to, but I—don't believe I've got any light; it does not make any difference to anybody what I do,—no one notices what I do."

"You do not know surely about that," responded Miss Winthrop. "You do not know certainly about that, and it does not concern you; your part is to keep your light burning brightly—whether any one looks or not and if you do your part the rest will be taken care of. Will you try?"

"Yes, ma'am," answered Say. But she did not seem very hopeful about it. She could not believe any one would pay any attention to her little light.

On Monday morning it was the first thing she thought of, and she wondered how she should find opportunity to keep her promise. Oh dear, how she hated Monday! Bridget was always cross, and mamma tired, and the children invariably did something a little more trying than common. To-day it was worse than usual, for it was rainy, and Bridget was cross because the clothes could not go out, mamma had one of her headaches, baby fretted incessantly because of his teeth, and Tommy was home from school with earache.

It was rather of a discouraging outlook to Say, when she came down. Papa was worrying lest breakfast would not be ready for him, so he could take the early train into the city. Bridget would not hurry, mamma with baby in her arms, crying, was wearily trying to hasten matters a little, while Dick and Tommy were already engaged in hot dispute. Say's heart sank,—she was sorely tempted to give up at the outset, an impatient word was on her lips, when her verse and promise came to mind.

"'Let your light so shine.' Oh dear, this isn't worth speaking of, only chance for a little twinkle; but then if I never have a chance to show a bright blaze, I must be sure and use all the little opportunities. I can look pleasant if I have got a pug-nose and more freckles than you can count" she thought to herself.

Then in a twinkling things seemed to change. Nettie appeared from somewhere, and took baby from mamma, up into the nursery Mamma herself was sent into the dining-room. Dick was helping set the table, fairly glowing with pride, because Say had whispered in his ear that Mr. Earl told her, last night he was the best scholar in the class.

Tommy's mind was diverted from all unpleasant thoughts for the time being, by the promise of maple syrup, which was his special weakness, for breakfast. As for Bridget, there was a light streak in the north-west that Say pointed out to her, the sight of which scattered her frowns like magic! perhaps, after all, she could get her clothes out. It was not much after all, but every one felt better.

"Now, mamma," said Say, after breakfast, "you just go up stairs and lie down. I'll take care of baby and see to things." Mamma hesitated and tried to remonstrate, but her head did ache so badly and Say seemed so willing and cheery.

It was a pretty long, tiresome morning, but Say kept repeating her verse over to herself,—to keep her courage up, she said.

After dinner, when baby, worn out, dropped asleep, and Tommy, having found a book of travels, had curled himself up in papa's big chair in the dining room, Say settled herself comfortably on the lounge in her room, book in hand. She had just congratulated herself on the long pleasant afternoon before her, when the bell rang, and there stood Miss Mercy Stone, with her work-bag in hand, evidently prepared to come in and sit awhile.

"Mamma is sick with a severe headache," said Say promptly.

Miss Mercy was just a little bit of a bore, for she made such long calls, and talked all the time about her aches and pains, which were innumerable, and a little worse than any one else's. Say was tired, you know: besides, she was just in the middle of a very exciting chapter of her book. "Mamma is sick," she said without opening the door very wide or inviting her guest to come in.

Miss Mercy's face fell, and Say's quick eyes did not fail to observe it.

"Oh dear! I suppose it would be a real comfort to her to come in and talk awhile. She's a Christian so of course it won't be letting my light shine: but I guess He would do it in my place." That was what flashed through Say's mind, all in an instant; then she said: "Mamma is sick, but won't you come in and sit with me awhile?"

Miss Mercy's face brightened. It was very quiet down to her little house. All alone—she was the last one left of her family.

"Thank you; I don't know but I will."

Say drew the big rocker up into the cosiest corner by the grate for her, and listened sympathetically while Miss Mercy told about her neuralgia, her rheumatism, "dyspepsy," and all. It was half-past five—almost tea-time—before she went.

"Well," thought Say, as she disposed of baby for the night, "I can do as I please this evening, any way, I must finish that book, for I promised to send it back to-morrow.

But she stopped on her way upstairs.

"Going out, Dick?" she asked, as he came through the hall, hat in hand.

"Yes, there's no special fun staying at home."

Say stood irresolute. There was the book, and here was Dick. Very likely he was going down street, and would fall in with some of the boys papa did not like him to associate with. Papa was a little troubled about Dick of late.

She might, but—she didn't want to; but oughtn't she?

"Stay home with me, Dick and we will make candy."

"And play checkers?" asked Dick, turning back irresolute.

Checkers was Dick's favorite game and also Say's particular aversion.

"Yes, and play checkers," she answered promptly.

"Say has been such a help and comfort," said mamma in her room that night to papa. "I do not know what I should do without her; her light shines every hour of the day."

"I had a right pleasant call," said Miss Mercy, talking to herself, for want of a better companion, as she sat by her lonely fireside that night. "I had a right pleasant call; it isn't every young girl that would be so polite to a tiresome old woman like me."

"She's a trump," said Dick to himself in his room. "I'll bet a cookie she had something she wanted to do herself. She's got the genuine article any way; any thing like that will do a fellow more good than a dozen sermons."

"I did want," wrote Say in her journal, "to keep my promise to Miss Winthrop, and let my light shine so bright and clear that it would help everybody that came near me; but I had only such little opportunities that, even if any one had noticed, they would have seen but a mere little twinkle; nothing that could glorify Him, or help any one,"—which was all Say knew about it.—*Sunday School Times.*

PUZZLES.

CHARADE.

A storm doth cause our ship to roll,
  Each *first* with *whole* is now made fast:
A prayer doth breathe each trembling soul;
  Thank God! we're safe within the *last.*

REBUS.

PO
ED

HIDDEN PARTS OF A BUILDING.

No one should be a miser.
It is a shame to shun the poor.
Did you ever see a vessel wrecked?
You will find your uncle at home.
One who is uncivil is ill-bred.
I bought some meal at Chandler's.
Oh what fine potatoes. I will take a bushel for father.
Stop, O stop that idle talk.

DOUBLE ACROSTIC.

1. A noted English essayist.
2. The given name of an American poet.
3. The name of a set of novels by a standard author.
4. A Spanish painter of the sixteenth century.
5. The name of a noted English poetess.
6. The name of a bird noted for its sweet song.

The initials form the name of an American poet, and the finals the name of another.

DECAPITATIONS.

1. Behead to eat, leave did ride.
2. Behead to fall, leave the whole.
3. Behead to waver, leave to change.
4. Behead to darken, and leave a frame.
5. Behead polish, leave misfortune.
6. Behead custody, leave aged.

HISTORICAL CHARADES.

1.

A resinous substance; name of a letter; a personal pronoun; a letter. Whole, a beautiful, but perfidious, Roman maiden who, to gratify her love for finery, unbarred the gate of the citadel to her country's foes.

2.

A domestic animal; a personal pronoun; a slender cord. Whole, a Roman conspirator.

BIBLE ACROSTIC.

1. Who, though forewarned by his faithful wife,
   Yet doomed to death the Lord of light and life?
2. Jesus, transfigured, robed in dazzling white,
   Who talked with Him upon the mountain height?
3. What prophetess rejoiced at Jesus' birth,
   At His first advent to our sinful earth?
4. What man devout, soon as the truth he heard,
   Received with joy the soul-inspiring word?
5. Of what good man is this brief record given,—
   "He walked with God on earth" and passed to heaven?

In these initials we may plainly see
Christ's parting gift,—a precious legacy.

ANSWERS TO PUZZLES OF LAST WEEK.

Star Puzzle—

A
H D 2
4 T M
H A G A R I T E S
A H R E
M T 5
P A
1 H S R B
H
P L
P I
U 3 R
E E

Enigma.—Croquet.
What is My Name—Clock.
Biblical Emblems—An Acrostic.
Reed
Ashes
Incense
Night
Bees
Oak
Wings—Rainbow.

A complete set of answers to last week's puzzles has been received from Thomas B. Reed.

IS THE PROMISE STILL GOOD?

A correspondent of *Word and Work* (London England) having stated his belief that the promise of healing in answer to prayer in James v. 14-16. was not a promise to the church now, is answered Mr. George Brealey the evangelist in the last number of that paper. He says, referring to the former letter:

Doubtless there may be a line of truth in his remarks which had special reference to discipline in the early Church, and it is also possible that many persons may have built their expectations of recovery on this Scripture without obtaining what they expected; yet facts are stubborn things, and multitudes can prove that the words referred to have been a promise to them which their faith could not lay hold of if it were not so. One of the difficulties in the matter of healing the sick one has been to find the elders of the Church. There are plenty of Church elders appointed by man who cannot pray the prayer of faith, and hence the disappointment experienced.

I will give three incidents personally known to me out of many which have come before my notice. I was in a certain town visiting and preaching the Gospel, when I was asked by a godly minister of the Gospel to call on a sick man, who had lain for years on his bed. His case has been one of much prayer, as he was a well-instructed Christian; but there were no signs of recovery. I said to the sick man, 'Has there been no prayer over you?' "Yes," he replied "much; but I am no better." I asked him if he had considered James v. 14-16 "Yes," he said. "Have you fulfilled the conditions?" "What are the conditions?" I read the verse, "Is any sick among you? let him call for the elders of the Church; and let them pray over him, anointing him with oil in the name of the Lord; and the prayer of faith shall save the sick, and the Lord shall raise him up." "Have you called for the elders of the Church?" "No, I have not," he said; but he did so the same day, and three godly men, the faithful minister I referred to among them, and they prayed over him, and anointed him with oil in the name of the Lord, and the same hour he was healed, and though he had lain in bed for two years he arose from his bed at once, and a short time after went to the West Indies as a missionary. He had no special sin to confess. He was in fellowship with a large number of Christians who were gathered to the name of our Lord Jesus.

Another case was that of a godly woman who had not walked for months, and who was a great sufferer. She sent for me to visit her. I found her as helpless as an infant. She said she had been reading James v. 14, and had called me to pray over her; she said she fully believed God would raise her up. I prayed with her, and when I had finished I said, "Are you healed?" She did not think the healing was to come at once. I said, "If you have faith in God, you can get up and walk to the top of your garden." She took hold of my arm, and walked to the top of the garden, and from that hour she was healed, and is now well.

A third case was of an unconverted woman, who was in a galloping consumption, yet deeply anxious about her soul. I read James v. 14-16, first setting Christ before her, whom she at once received; also her sister and aged father who had come 200 miles to see the last of her. All these were converted at that hour. And then I was able to thank God for her healing, which took place from that time: she is now well, and this was several years since.

I have taken the above Scriptures as applying to us in this day as much as similar promises given elsewhere. For instance, it is written in Mark xi. 22-24, "Jesus answering, saith unto them, Have faith in God. For verily I say unto you, that whosoever shall say unto this mountain, Be thou removed, and be thou cast into the sea; and shall not doubt in his heart, but shall believe that those things which he saith shall come to pass; he shall have whatsoever he saith. Therefore I say unto you, What things soever ye desire, when ye pray, believe that ye receive them, and ye shall have them."

No one, I suppose, will doubt the application of the above Scriptures to the present time, though, alas! so little faith is found to lay hold of the blessing in them. It is the prayer of faith, and not faith in prayer. But two things are needful for this. There must be a promise for faith to lay hold of, or it cannot be faith. And there must be a high state of communion with God for faith not to doubt. God's glory must be the first object, and then there will be no self-boasting when the prayer is answered.

Confess your faults one to another, and pray one for another, that ye may be healed. Alas! the Church has much to answer for in this matter. Are there not multitudes who have abundant faults which are unconfessed to God, and therefore remain unconfessed to those against whom the fault is committed, which is the reason for the unhealthy condition of the churches?

Resurrection is God's cure for our poor diseased bodies, yet He is pleased to give health to some in answer to believing prayer. And let not such as suffer the will of God in a diseased body be cast down if they have not faith for healing. To those who walk with Him He always gives the best things, and some of our best things are very bitter to the flesh which needs the thorn in it.

Yours faithfully, G. BREALEY.
Clayhidon, Wellington, Somerset.

READABLE PARAGRAPHS.

MR. THOMPSON AND THE CROWS.

BY ALLAN FORMAN.

"I reckon them plaguey crows are goin' to eat up all the corn," said 'Lisha one morning during a discussion with Mr. Thompson regarding the weather, the state of the crops, and so forth.

"Hm!" said Mr. Thompson; then paused as if immersed in thought. "Hm!" he continued; "I have read that in England children are employed to keep the crows off the corn."

"Reckon corn can't pay a very big profit there, if they have to take the child's wages out of the price of the crop," commented 'Lisha.

"And it struck me," continued Mr. Thompson, not heeding the interruption, "that I might sit in the field and read, and at the same time keep the crows away."

"I s'pose you could, ef you didn't go to sleep," replied 'Lisha, with a sly laugh.

Mr. Thompson sniffed indignantly, and after a little more talk it was decided that he should take his book and sit in the corner of the field. After he had settled himself comfortably, and read several pages, he began to feel drowsy. His book dropped on his knee, and his thoughts turned to the crows.

"I wonder what they pull up the corn for!" he murmured. "They don't seem to eat it."

"'Cause," replied a coarse voice just behind him.

"'Cause why?" inquired Mr. Thompson.

"'Cause we do eat some, and we pull up the rest for fun," replied the voice.

Mr. Thompson turned to look; there was a big crow sitting on the fence gazing at him curiously his black head was cocked on one side, and his bead-like eyes were full of mischief.

"Don't you know that is very wicked!" said Mr. Thompson, severely.

"Hump!" croaked the crow, contemptuously. "If you was a crow, you'd feel differently.

"I should always feel like doing right," said Mr. Thompson.

"Try it and see," croaked the crow.

Mr. Thompson felt himself shrinking, and his black coat was changing to feathers.

No sooner had the change become complete than he felt an irresistible desire to pull up a hill of corn. As soon as he had uprooted one, he was filled with joy and a desire to destroy. He went to work with a will, and in a few minutes had pulled up quite a number.

"I thought that was very wicked," croaked a hoarse voice, with a tone of sarcasm.

Mr. Thompson paused a moment. "It is," he admitted. "But," he added, "it is such fun; and then men shoot us at every possible opportunity. It is no more than fair that we should get even with them."

"You talk like a sensible crow," said his companion. "But here comes a man;" and he uttered a derisive "Caw!" as he flew off, followed by Mr. Thompson.

"Let's go down to the shore," remarked the crow, as they came in sight of Long Island Sound.

Soon they were on the shore of a little creek that came in from the Sound. Mr. Thompson and his companion walked along the edge of the water, when suddenly Mr. Thompson spied a soft crab. He made a quick snatch for it, and caught it. His companion looked on in disdain.

"Humph!" he said, "who wants a crab? I've got a clam."

"What good is a clam?" retorted Mr. Thompson. "You can't open it."

"Can't I, though?" and the crow took the clam in his beak, flew high over the stony beach, and dropped it. The shell cracked, and the crow ate the clam with a relish.

"Look out! here comes a kingbird!"

Suddenly, with an angry cry, a small gray bird swooped down upon them, and making a vigorous peck at Mr. Thompson's eye, dashed off before he could retaliate.

"Come on," cried the old crow; there is no use of sitting still and getting our eyes picked out."

They flew as rapidly as they could over toward the corn field, the kingbird following them a part of the way. When they reached the field, the crow alighted on the head of the stuffed figure which the farmer had set up for a scarecrow. Mr. Thompson settled on the outstretched arm.

"Yes," said the old crow, as if continuing a previous conversation—"yes, it amuses me to see the way these farmers think to frighten us with such stuffed figures. Now anything that is in motion, like that bunch of feathers over there, really does scare me, for I never know how far it will swing; but the idea of any intelligent crow being frightened at this thing—why, it is preposterous. And then the contemptible way in which they treat us, too—shooting us whenever they have a chance. Now there comes a crowd up the road in a waggon. They won't hurt us: they are afraid to shoot when the horses are around. Hullo! one man is getting out, and, as I live, he has a gun. Let's be off."

But Mr. Thompson got confused, and instead of flying away, he flapped heavily toward the corner of the field, and alighted beside his book. The man with the gun crawled cautiously up to the fence. It was 'Lisha.

"Wa'al, I vow, ef here ain't Mr. Thompson fast asleep!" he muttered. "I'll give him a scare;" and cocking his gun, he discharged it close to Mr. Thompson.

Mr. Thompson jumped up, and looked around savagely.

"What are you shooting at?" he demanded, sharply.

"Nothin' in particular," replied 'Lisha, somewhat abashed. "I tried to shoot a crow, but the pesky thing flew off."

"Of course he did. We saw you get out of the waggon, and he knew you had come to murder him," said Mr. Thompson, severely.

'Lisha looked at him in surprise. "I reckon you've been asleep," he ventured. "You cum out to keep the crows off the corn, and when I cum here, thar was two settin' on the scarecrow."

"Yes," replied Mr. Thompson, calmly, "that was my friend and me;" and he walked majestically toward the house.

'Lisha looked at him in opened-mouthed amazement. "Wa'al, I vow, he do hev the funniest dreams!" he muttered. "But," he added, after a moment's reflection, "it 'pears to me one of them crows did fly over to this corner." And 'Lisha shouldered his gun and walked home, speculating upon the eccentricities of the city boarder."—*Harper's Young People.*

WHY PUSS WASHES AFTER EATING.

A long time ago,
  How long I don't know,
A cat caught a lively young rabbit,
  And with it she'd play
  In her own cruel way—
As we all know cats have the habit.

  She thought if 'twere stewed,
  'Twould be very good
With gravy and well-baked potatoes;
  'Twould make a nice roast,
  Of which one could boast
If eaten with corn and tomatoes.

  Or if it were fried—
  But she could not decide,
While in her embrace still reclining,
  The saucy young hare
  Said, "Are you aware
That gentle folks wash before dining?"

  If etiquette laws
  Contained such a clause
Puss thought it was time to begin it;
  But to her surprise
  While wiping her eyes
The rabbit was off in a minute.

  She stood with a gaze
  Of utter amaze
On seeing her dinner retreating,
  And since that sad day
  Sly puss has a way
Of washing her face after eating.

—*J. E. M., in Modern Argo.*

"COME OUT OF THAT."

There is a section of Illinois called Egypt. The other day an Arkansaw man whose son lives in that community wrote as follows to the young man:—"Come out of that place. If they desire to have a fight there, let 'em fight. Old Seymour, because he was beaten for the presidency, wants to take his spite out of the people of your district. Next thing you know, old Tilden will fire on somebody. Come away from there before you get your head shot off.'—*Arkansaw Traveller.*

THE AGRICULTURAL CONGRESS

THIRD ANNUAL MEETING.

A MISUNDERSTANDING—THE OBJECTS AND CONSTITUTION OF THE ASSOCIATION—AN INTERESTING PROGRAMME.

MONDAY, August 21.

The third annual meeting of the Society for the Promotion of Agricultural Science opened at the rooms of the Natural History Society this morning at 10 o'clock.

Mr. W. J. Beal, A.M., M. Sc., Ph. D. Professor of Botany and Horticulture, Michigan Agricultural College, Secretary of the American Pomological Society, and President of the Society for the Promotion of Agricultural Science, occupied the chair. Owing to a misunderstanding concerning Sunday travelling a number of the delegates to the convention were detained at Clay ton and will not arrive until this evening. Among those present at the opening this morning were Messrs. E. Lewis Sturtevant, A. M., M. D., Director of the New York Agricultural Experiment Station, who officiates as Secretary of the Society; L. B. Arnold, A.M., Lecturer on Dairy Husbandry, Cornell University; George H. Cook, Ph. D., LL.D., Professor of Chemistry and Agriculture, Rutgers Scientific School, State Geologist of New Jersey, and Director of the State Experimental Station of New Jersey B. D. Halsted, D. Sc., Editor-in-chief of the *American Agriculturist;* Levi Stockbridge, President and Professor of Agriculture, Massachusetts Agricultural College; W. W. Tracy, M. Sc., Professor of Botany and Entomology and Seperintendent of Garden, Mission University, Secretary of the Mississippi Valley Horticultural Society; John Dougall, Editor and Proprietor of the New York *Witness*, and a number of others.

The Association was originally formed for the *purpose of promoting agriculture, by fostering* investigation in science applied to agriculture. For this purpose during the past three years its members have met for the presentation and discussion of original papers on subjects embraced within the scope of this field of enquiry, and for the consideration of plans for further investigation either individual or co operative. The Association pledges itself to encourage as far as lies in its power all exact investigation leading to advancement in agriculture. The membership is limited to forty.

Since the publication of the last circular the following additional papers have been sent in: 'The mineral constituents of plant growth, and observations regardi the yellows of the peach,' by C. A. Goessman, Ph. D., Professor of Chemistry, Massachusetts Agricultural College; In relation to legislation concerning Lung Plague by James Law, F.R.V.C., Professor of veterinary medicines and surgery, Cornell University; investigations on the potato, by E. Lewis Sturtevant, A.M., M.D.; and "The Study of Soils," by George H. Cook, of the Rutger's Scientific School.

After a few preliminary remarks by the President, Professor Penhallow, of the Houghton Experiment Farm, Orange County, N. Y., read a paper by Prof. Gorssman on

MINERAL CONSTITUENTS IN PLANT GROWTH.

of which the following is a summary:—The recognition of the important influence which certain mineral constituents of plants exert on plant growth, has contributed greatly to the success of modern agriculture. The presence of mineral constituents in an available form in the soil is essential for the reproduction of any plant from its seed. As late as 1830 Von Liebig, one of the leading botanists of the University of Berlin, asserted that ground bones were of no use as a fertilizer in Germany. Even ten years latter Dumas, the eminent French chemist, considered the mineral constituents of plants as a mere incidental feature in the vegetable economy. Before 1840 not one pound of Peruvian guano was used upon the farms of Europe, although in 1814 Alexander von Humboldt *had* described its use as a fertilizer in Peru and some shiploads of that material had found their way to the London market. These instances of comparatively recent ignorance are almost incredible but are matters of history. Agriculturists of previous ages admit the usefulness of wood-ashes, bones, gypsum, lime and other mineral substances, besides the various kinds of animal manure. Modern rational agriculture, however, does not rest its claim of progress on the mere introduction of any particular new mode of operation, for real progress in this direction consists mainly in the discovery of the principles which control the successful application of these practices in the management of farms. Rational modern agriculture recognizes as the foundation of a successful farming the necessity of a strict restitution of those substances to the soil in an available form which have been abstracted from the soil, in the most economical way. As long as the composition of the air and the water was but little understood and that of the soil practically unknown no correct idea could be formed concerning their mutual relation, and still less regarding their connection with the life and growth of plants. For this reason the first successful attempts to study the relations of the vegetable kingdom to these three agencies date only back to the close of the past century. Between the time elapsing between the first publication of the investigations of de Saussure and Dany and those of Liebig, no material change of opinion regarding their possible more intrinsic value of mineral elements in plant life. The year 1840 is on this account usually cited as the beginning of a new era in the history of agriculture and its associated branches. Liebig taught that a certain amount of mineral elements are indispensable for the complete development of a plant through all its various stages of life, and that in case the ash constituents of the plant are not supplied in due time, the plant may come to blooming, yet cannot produce a perfect seed. Knowing now what kind of element the perfect plant contains, the practical experience of the past receives a more intelligent interpretation of its results and future success a better chance. Liebig's genius has given an impetus to the study of plant growth with reference to its application in practical agriculture which has been pursued since with an interest and success unparalleled in the history of any province of science. Much has been accomplished, yet more remains to be learned to free our present system of manuring from that degree of uncertainty which a reasonable prospect of success still demands.

A few ash analyses of plants do not suffice to decide what kind and what amount of mineral plant food a crop needs, and still less in what combination they produce the best effect; they simply tell what kind and amount the plant under examination contains. It is well known that plants raised in different soils contain different proportions of the same mineral constituents. Science, however, has not yet been able thus far to ascertain the existence of any defunct numerical relation between the exact amount of essential mineral elements of plant food and the amount of organic matter which may be produced by the aid of the former. The writer had spent considerable time and trouble in investigating the subject and subjoined statements of the results of several experiments with special fertilizers on grape vines and strawberries. After the reading of the paper the Chairman announced that five minutes would be allowed all members for a discussion of the paper, No discussion took place however.

DISEASES OF PEACH TREES.

Professor Penhallow then presented some observations regarding the yellows of the peach, by Prof. C. A. Groessman, Ph. D., of the Massachusetts Agricultural College, Amherst, Mass. The soil in which the peach tree was planted had a great deal to do with the production of the yellows. In regard to this statement, the professor mentioned the fact that a tree planted in light sandy soil was badly infected with the disease, while in richer soil, at a distance of about 75 yards, were several trees perfectly healthy. The trees had received but little care, and though planted in 1870, had received no special manure until 1876, and since that time only one crop, and that a crop of squashes, has has been taken from the land, with the exception of the fruit from the trees. The composition of the special manures to be used with the trees was then described. The special treatment of diseased peach trees began in 1878, when the personal attention of the writer was drawn to the matter. The trees which received the fertilizing manures were stronger and healthier than the ones which were left without. The appearance presented by the trees suggested that the abnormal condition of the soil might be the cause of the defection. This might be ascribed to a general exhaustion or an absence of one essential of the elements of plant food. To the presence of some injurious substance in the soil could also be ascribed the decay of the shrubs. The fungus which covered the diseased part of the tree also deserved special mention, and denoted a secondary feature of the yellows. The observations in regard to the grape vine tended to strengthen this belief. The fungi could not be observed in healthy plants which had been placed in rich land. The changes brought about by the insufficient production of chlorofyle. The same changes could be caused by an interference with the normal cellular functions. The first agriculturists to take this view were Hobbe, Schrœder and Erdmann, chemists, who first discovered it in 1871. The different results produced by the absorption of sulphate and chloride of potash were next laid down. The use of phosphatic fertilizers was next considered and approved of. Professor Maynard, who followed this treatment of plants, reports a signal success. Professor Penhallow had inspected the trees in the cellular tissues of which they made a strict search. The cellular tissues of branches from healthy trees were also examined. The mineral constituents of branches taken on the same day were also examined. The analytical results of the examination were shown and presented a remarkable difference as far as potash and lime were concerned. The differences were more marked in the branches than in the fruits. The diseased plants contain less potash and more lime than the healthy subiects. Healthy wood showed comparatively little starch, but fungus growth was observable in the outside bark of the trees. Diseased wood showed an abnormally small development of the cells and a large quantity of stored starch. An abundant growth of fungi was also noticeable. The relative appearance of the diseased and healthy parts of trees was also fully laid down. The same views on the matter were held by Professor Penhallow and the writer in regard to the matter. The result of the observations pointed to the fact that the various stages of the disease are merely due to different matters of degree. The remarks were only presented as suggestive and not as a proof.

Professor Penhallow and Dr. Halsted then took part in a brief discussion on the subject of the paper, after which

Major H. G. ALVORD, Manager of the Houghton Experiment Farm, then read a paper by Prof. W. H. Jordan on the "Non-albumenoid nitrogen of Timothy at different stages of growth." The fact is well known that the albumenoid compounds of our various cattle foods are the only vegetable substances of which it can be affirmed with certainty that they can be converted into animal albumenoids such as the albumen and fibrine of lean meat and the casein in milk. He then discussed the conditions affecting the amounts of these bodies existing in any species of fodder. Until recently chemists assumed that all the nitrogen in plants was combined in the albumenoid form, but it is now known that it exists in other forms in the various materials fed to farm animals. These compounds, however, mostly take no part in animal nutrition, while the effect of the others is so uncertain that it seems improbable that they appropriate any considerable quantity of nitrogen. The opinion has become quite general that the percentage of total nitrogen existing in the non-albumenoid form becomes smaller as the plant approaches maturity, and this idea is certainly in accordance with the views entertained concerning the office of amides and related bodies in vegetable nutrition. The results of earlier investigation in the amides in grasses, especially those of Kellner, also favored the idea that when active growth ceases, and the transportation of albumenoid material no longer becomes a necessity, the amides disappear somewhat from the plant. Different results were obtained from different plants. The examination by American analysts of twenty-three samples of timothy cut at different periods of growth, gave results that made it seem doubtful if the amide nitrogen diminishes materially in this grass after the period of bloom. The average of non albumenoid nitrogen in four samples cut previous to or in early bloom is 26 percent of the total nitrogen, while for four samples in or part full bloom, the average is 25 percent, a difference that is not material and which does not indicate a diminishing of the amide nitrogen at the later period of growth. The results of the analysis of ten samples at the Pennsylvania State College Laboratory, held for the object of determining the influence of fertility and of the stage of development upon the amide nitrogen, showed that increased fertility had the effect of causing more of the nitrogen to exist in the non-albumenoid form and that maturity or the approach of ripeness did not diminish materially the non-albumenoid nitrogen.

No discussion ensued at the conclusion of the reading of this paper.

VACCINATION EXPERIMENTS.

The following paper, by Mr. D. E. Salmon; D.V.M., veterinarian to the U.S. Department of Agriculture, on the subject of vaccination, was then read by the President as follows:

"Various observations convinced me that the effects of a virus depend largely upon the dose introduced, and this encouraged me to investigate the precise effects which follow the inoculation of fowls with different quantities of cholera virus. To accomplish this it was necessary to produce a virus of a standard strength before any definite results could be obtained, and the problem was solved by cultivating the microphytes for a given time in a liquid containing a definite proportion of nutritive material. Even then, the investigation of this question was not so free from difficulties as one might imagine. Of a number of fowls inoculated with one drop of a dilution of 1 to 10,000, five or six would die. Another one or two would contract a severe form of the disease and recover; but by far the greater number remained perfectly well. As a certain number recover under any circumstances, when they have contracted the affection there was a great temptation to conclude that the disease produced by diluted virus was of substantially the same intensity as that produced with the undiluted; but that the diluted was such that every drop could not contain the germs, and consequently many of the inoculated fowls escaped. Such a conclusion would scarcely have been a novelty in this class of investigations, but it would nevertheless have been an egregious mistake. For if the fowls which showed no symptoms of disease in this experiment are inoculated with the strongest virus, nearly all of them will prove to be completely unsusceptible. Were these birds unsusceptible when purchased as we know many are, and thus able to resist the virus in the first experiment, or did they acquire this unsusceptibility during the experiment?

A microscopic examination of the virus discloses the fact that every drop contains at least a million and a half, and possibly many more, of the peculiar micrococci of this disease; and, consequently each drop of our dilution of 1 to 10,000 must contain 150, and our first supposition that every drop did not contain the germs must be wrong. If, now, we make daily examinations of the appearances at the point of inoculation we will see that with the fowls inoculated with the dilution of 1 to 10,000, although the puncture may heal as when no virus is used and present a normal appearance for three or four days or a week, at the end of this period there is evidence of a slight local inflammation—the blood vessels are distended and the point is swollen. This irritation does not disappear until about three weeks, counting from the inoculation, has elapsed except in those cases where the disease is contracted. If we use a dilution of 1 to 100,000 none of our fowls die, and a much smaller proportion contract the local lesion which I have referred to, and we may easily show that those which contract it acquired immunity from the effects of subsequent inoculations with ordinary quantities of virus while those which do not contract it are as susceptible as before. It is evident, therefore, that inoculations with sufficiently diluted virus is followed by an entirely local multiplication of the disease germs and that this is sufficient to produce insusceptibility. In case the virus is too strong, the local irritation may appear, but in a few days the germs penetrate the entire body and the local lesion is either greatly diminished or it entirely disappears. If the local irritation has been apparent for a week or more before the general reflection occurs a certain degree of immunity has been acquired and the bird generally recovers. As the susceptibility of different individuals varies remarkably, our first preventive inoculation must be with an extremely diluted virus (1 to 75,000); those individuals which prove insusceptible to this are then inoculated with a stronger virus, and so on, until all have contracted the local lesion, which is a proof of the success of the operation.

The advantages of this method are that a virus of a definite strength may be produced in any quantity within a few minutes, and that the individuals which have contracted and recovered from the local lesion are insusceptible to the most active virus, while the economy of the material is such that a single drop of the strong virus is sufficient for the inoculation of ten, twenty, or even fifty thousand birds. I have made a number of experiments during the past year to determine if an immunity might not be granted by hypodermic injections of considerable quantities of de-vitalized virus—or, in other words, of the chemical products of the growth of the pathogenic germs as has been believed possible by good authorities, but in no case has any success been attained. It was, also, an interesting question to determine if the offspring of birds made insusceptible by vaccination might not inherit a certain degree of immunity. Here, again, our experiments have shown that no degree of immunity is conferred.

Vaccination with an attenuated virus, or inoculated with a diluted virus, which practically produce the same effects, are then our great hope for the future in our efforts to control the contagious fevers. And although it will require an extensive experience to demonstrate which of the methods noticed is, all things considered, the most satisfactory, it cannot be doubted that either of them constitutes a most important addition to our resources. And these discoveries have resulted from patient scientific research, from experiments upon living animals, and in no other way could we have learned of these great laws of nature upon which they depend.

Dr. Townsend and Mr. E. A. Barnard then gave some of the results of their own experience in the subject matter of the treatise.

GERMINATION OF SEED.

A paper on the germination of seeds, by J. J. Thomas, Associate Editor of the *Country Gentleman*, was then read by the President. The paper was a statement of the results of a series of experiments made by the writer, with the practical deductions therefrom These went to corroborate the well known fact that seeds require for germination a certain amount of moisture, warmth and air, but not light. Every farmer and gardener is familiar with the fact that no seeds can grow in a soil, no matter how perfect in other respects, if destitute of moisture, or in a season of extraordinary drought Cultivators know equally well that a certain amount of warmth is required, but a complete series of experiments with different seeds to determine the temperatures at which growth can begin would be useful in practice, and might often prevent failure. The experiments made in the present case were principally for the purpose of throwing additional light on the third well-known requirement for germinations, viz., the presence of air. Buried beyond a certain depth in compacted air, all seeds will remain dormant for an indefinite length of time. Nurserymen sometimes employ this dormant influence to hold a surplus of peach stones or other large seeds from growing till wanted by burying a foot or two in closely trodden soil, and the small seeds of weeds remain for years several inches beneath the surface until brought up to the action of the air by ploughing. Their unsuspected presence in this condition has led to the absurd notion of the spontaneous germination of weeds, or of the equally erroneous one of the transmutation of unlike species. The size of the seeds should control in a great measure the depth to which they should be covered with soil The common rule that the depth should not much exceed five times the diameter ot the seed is a good one, and in accordance with this rule the grains of corn which are half an inch in diameter may be planted two and a half inches deep or any less depth which shall give them sufficient moisture. Clover seed, on the other hand, the diameter of which is hardly the twelfth of an inch, should not be buried more than half an inch for its ready germination and growth. From personal experiments it was found that corn planted at depths ranging between half an inch and six inches came up in from six to fifteen days. With oats very nearly the same results were obtained. Experiments with barley gave results quite similar to those of wheat, but no plants found their way to the surface in a strong soil from a depth of six inches. But they came up freely when covered with coarse sand at even greater depths. All the larger culmiferous plants such as corn, oats and wheat, if growing from a great depth sent out a new set of roots near the surface and these new roots afterwards became the whole support or nearly so, the lower ones which started in the soil not increasing or extending. A principal reason why deep planting was less successful than at more moderate depths appeared to be the loss of time in slowly reaching the surface and in forming this new set of roots. In some cases plants of the smaller grain crops which came from a depth of from one to two inches, appeared to be rather stronger than those planted only half an inch, but the experiment was not repeated often enough to establish a general rule.

The number of days required for the various plants to reach the surface would, of course, vary considerably with the temperature of the season and the warmth of the soil.

The practical deductions to be made from these experiments teach the importance of adapting the depth in sowing the different crops to the size of the seed; that while the corn may be buried with propriety at a depth of two inches, especially in light and porous soils, timothy seed should not have a covering of over half an inch, nor clover of more than an inch. They also suggest indirectly the importance of a finely pulverized soil for favoring germination; that grass seed should not be buried by using a common cross harrow, but a fine brush or roller, and the advantages of a top dressing of fine manure to retain moisture over minute planted seed. They also explain how harvest seedsmen may be unjustly censured and charged with selling bad seed, simply because the farmer or gardener who planted it placed it at a depth from which the young and struggling plants find it impossible to reach air and light.

After the President had finished reading the paper Professors Tracey, Stockbridge and Arnold and Mr. James Dougall took part in a brief discussion on the points raised by the writer.

The meeting then adjourned until 3.30 p.m.

AFTERNOON SESSION.

POTATO CULTIVATION—VITALITY OF SEEDS—STUDY OF SOILS.

The Society resumed its sittings at 3.30 p.m. Prof. W. J. Beal, in the chair.

Dr. E. LEWIS STURTEVANT Director of the New York Agricultural Experiment Station, then read an exhaustive paper entitled

"INVESTIGATIONS ON THE POTATO."

The paper was a partial report of investigations on the potato carried on under the personal supervision of the writer at the New York Agricultural Experiment Station.

The first experiment showed the relation between the different eyes and the axis of the root. If a potato tuber be cut into slices so that the knife shall divide the axis and many of the eyes, and then this section be soaked for a day or so in a solution of carmine in weak aqua ammonia, an examination of the colored surface will make visible a central line, and branches from this central line to each of the eyes. If a bud upon the stem be found to become tuberous, and then the stem and the bud be slit, the parts of the bud are seen to be continued into the stem, the pith of either are coincident, as well as the woody tissue and the bark, the nutriment matter which comprises the bulk of the potato being absent, or occasionally perhaps represented by a thin layer. This stem tuber is a short and shallow stem like the potato tuber, and like the potato tuber bears a number of eyes, which may under proper treatment be developed into shoots and leaves in the same way as the eyes of the potato. The stem tuber formed in the axil of a bad scale, the leaf shoot formed in the axil of a leaf, and the potato tuber borne upon an underground stem which originates in the axil, are analagous formations, developed each in a different direction by environment. If we take cuttings from these different formations the axillary branch roots at the nodes send out stems, and bear potatoes on underground shoots; the potato tuber sends out shoots from the eyes, which likewise send forth tuber-bearing stems. Even a peeled potato vegetates under proper conditions from the cut surface of the eyes. When a whole potato is planted usually but two or three eyes develope into shoots, the other eyes remaining dormant. Each eye ruled over its own territory and through the intervention of the central stem influences to some extent the nutrition of other eyes. At the station a complete set of experiments upon potatoes are under progress. The results of writer's the experiments pointed to the fact that the depth in which the eye penetrated in the cutting seemed to be the principal factor which influenced the earliness and the quantity of the crop. A single eye cut so as to include the whole depth of the central axis, of the potato tuber used as seed invariably gave a better result than did any other method of planting, not excepting even the whole potato used as seed. Seed cut irregularly without regard to the nature of the eye, cannot produce results which are as uniform as those which are obtained when the seed is cut with reference to the structure of the eye.

The results of all the experiments show that if potato seed is cut with refrence to the structure of the root a large saving of seed and increase of crops will result; seed cut regularly without regard to the eye cannot be expected to be productive, and the uniform results obtained by some farmers are solely attributable to the care and skill shown in the preparation of the seed. The paper, which throughout was of a most interesting character, was further elucidated by diagrams drawn by Prof. Sturtevant.

Prof. PENHALLOW then explained with the assistance of the diagrams certain facts which he had noted in experiments on the potato.

Mr. E. A. BARNARD said that he had had a long experience in growing potatoes in the Province of Quebec, and he quite agreed with Prof. Sturtevant's statement that the depth to which the eye penetrated in the cutting was the principal factor influencing the earliness and quantity of the crop.

Prof. TRACEY also made a few remarks in favor of the system.

VITALITY OF SEEDS.

W. W. Tracy, M. Sc. of Detroit, Mich., then read a valuable paper upon the "Vitality of seeds and the influence of light and soils on their germination." The writer stated that during the past two years he had been called upon to test the vitality of some 3,600 samples of seeds, including those of nearly all our garden vegetables, and that during that times. between four and five hundred samples, representing nearly all the species were tested simultaneously in earth saucers and paper, with the aim of ascertaining the best methods for each species. The general results of these trials may be stated as follows: The grasses gave the highest and most uniform results in paper; peas, beans, clover, and wheat gave slightly higher and nearly as uniform results in the saucers, all other seeds tried gave higher averages, and much more uniform results in the soil. The writer had found that there was a marked difference in the *usual* vitality of different varieties of the same species. A sample possessing high vitality will come up quicker and give a higher percent in the absence of light. In many cases free circulation of air is essential to the best results, particularly if the seeds are weak. All these statements pointed to what the writer believed to be true, that was, that the vital action requiring all the conditions of plant growth commences within the plantlet much earlier in the process of germination than is generally supposed. This set of experiments was undertaken to show what the writer thought to be true, namely, that the chemical character of the soil had a well-marked influence on the germination; but he thought the results, although proving nothing, yet gave strong indications that this was not the case, but that the difference depends rather upon their relative vitality.

THE STUDY OF SOILS.

Dr. George H. Cook, of New Jersey, then presented a paper on the study of soils, in which he stated that much more than the the chemical composizon had to be considered in deciding upon the capability of soils for producing crops. A brief statement was given by the writer of observations made in a geological and agricultural survey of his native State of New Jersey. The geological formations found in this State comprised the whole series, except hat of the coal. The glacial drift which coveredso much of the northern part of this continent ias its southern limit in the northern part of New Jersey. The country north of this drift lne was almost everywhere covered with an neven layer of sand, gravel, clay, and boulder derived from rocks to the north of them, an are sometimes mixed and at others separated. The soils south of this line are chiefly derived rom the decomposition of the rocks, which unerlie them, and they are singularly uniform in their composition and their agricultural capabilities; it could be easily seen that the elements in these various soils must be the cause of the great differences in the qualiy and amount of their products. These soils varied in composition sufficiently to furnish a basis for study and comparison, and. guided bytheso, field experiments might be tried which would give a new light to this perplexing subject. Such experiments on several typical soils had been commenced in the New Jersey Experimental Station, and samples were being collected of the soils for the purpose of further examinations and experiments upon them, and if possible to find out parts of their constituents which were immediately available and how best to bring the remainder into an available condition. This was a work in which all the experiment stations could take part It might be accomplished but slowly and by successive steps, but it was sure to be finally successful.

There was no discussion on this paper, and Mr. L. B. Arnold, A.M., lecturer on Dairy Husbandry, Cornell University, read a paper on the

"ORIGIN OF BUTTER FAT."

It described the division of butter fats in regard to their origin into animal and vegetable and in respect to their composition, into volatile and non-volatile, flavored and unflavored, etc. Some of them are derived from the vegetable kingdom, while others are elaborated in the animal body. The flavoring oils of certain vegetable substances are absorbed into the general circulation of a milk-giving cow without change, and are immediately distributed through all parts of the body, including the under. Since some of the vegetable oils are taken directly into the blood, and distributed through the body and lodged in the udder, it is possible to infer that others of like character are disposed of in the same way. The non-volatile fats, it is also inferred, may also be taken up and appropriated directly without essential change. There is evidence to show not only that fats can be digested and absorbed without decomposition or change but that it can be accomplished by aid of stomach digestion, and it has been shown that stearine, of which milk fats contain a larger per cent. than any other, and which has its nominal melting point at 145, may by gastric agency alone have its melting point reduced below blood heat and be capable of digestion and assimilation or transmission to the udder or other parts of the body, no decomposition as has been supposed, being necessary to its utilization. Experiments also show that oleaginous substances are digestible in the stomach and that the hardest of them can by gastric agency alone be made so attenuated as to be capable of absorption at the temperature of animal bodies, and that the great bulk of butter fats are derived directly from the vegetable kingdom by an easy transfer from the food consumed to the udder. In fact so much of the cow's labor is machine work that it becomes a matter of prime importance for the dairyman to study carefully his cattle food, that he may make a judicious selection of raw material for his cows to work up, in other words, such as contain the fats he desires to have in his butter.

The meeting then adjourned.

EVENING SESSION.

In the evening a business meeting of the society was held at the Windsor Hotel, when the following new members were elected:—Major H. E. Alvord, Haughton Farm, Mountainville, N.Y.; Prof. C. V. Riley, Entomologist to the Department of Agriculture, Washington, D.C.; Dr. H. P. Armsly, Storrs' Agricultural School, Mansfield, Conn., and Dr. C. W. Dalney, North Carolina Agricultural Experiment Station; Raleigh, N.C.

The following officers were then elected for the ensuing year:—President, Prof. W. H. Brewer, Yale College, New Haven, Conn.; Secretary, Prof. G. C. Caldwell, Cornell University, Ithaca, N.Y. These two officers, with Mr. L. B. Arnold, of Rochester, N.Y., form the Executive Committee.

THE SECOND DAY'S PROCEEDINGS.

THE PRESIDENT'S ANNUAL ADDRESS—FRESH ARRIVALS—INTERESTING PAPERS.

The Society for the Promotion of Agricultural Science resumed its proceedings this morning at 10.30 a.m., with the President, W. J. Beal, A.M., M.Sc., Ph D., in the chair. Among the members of the Association who arived last night were W. H. Brewer, Ph.D., Professor of Agriculture, Yale College, and Secretary of the Board of Control of the Connecticut Agricultural Experiment Station; G. C. Caldwell, B.Sc., Ph.D., Professor of Agricultural and Analytical Chemistry, Cornell University; J. H. Comstock, B.Sc., Professor of Entomology, Cornell University; A. J. Cook, M.Sc., Professor of Zoology and Entomology, Michigan Agricultural College, President of the American Bee-keeper's Association; F. A. Gulley, B.Sc., Professor of Scientific and Practical Agriculture, Agricultural and Mechanical College of Mississippi; R. C. Kedzie, M.S., Professor of Chemistry, Michigan Agricultural College; J. W. Sanborn, B.S., Agricultural Department, Dartmouth College; E. M. Shelton, M.S., Professor of Practical Agriculture and Superintendent of Farm, Kansas Agricultural College.

THE PRESIDENT read the following annual address:

Members and friends of the Society for the Promotion of Agricultural Science,

Again another year has rolled around, and we meet for the third time to renew acquaintances, form new ones, and engage in discussing subjects pertaining to science in agriculture.

At each previous meeting you chose me as your presiding officer, an honor which I shall always remember with the highest gratification and pride. From the start I have had a deep interest in the welfare of the society. I am full of hope and zeal for its future growth and usefulness. However much I may be gratified with the high honor you have conferred on me, I cannot help expressing my honest opinion that no one person should long act as President of such a society as this.

I believe it will promote interest, strength and harmony to pass the highest honors from one to another. I hope you will agree with me and I shall be much surprised if you do not select some other member for your next President.

To those who do not belong to the society I may say that our number is quite small and limited, persons only becoming members by invitation.

At present we number only thirty-four, and these are widely scattered in States bordering on the Atlantic, the Pacific, the great Gulf of the south, the great lakes of the north and in intervening States.

A larger number of members are present than at any former meeting. On our programme for this meeting appear the names of two-thirds of our members and some of these appear more than once. This is some indication of the interest felt in the society.

From all indications this interest in our society is steadily on the increase. Without exception it has the cordial support of all its members and a host of others who are looking for the advancement of agriculture.

The objects of the society are quite distinct from those of any society which has ever existed in this country.

The objects were stated briefly in my opening address at the last annual meeting, and are substantially as follows:

I. To encourage the formation, co-operation and support of agricultural experimental stations.

II. To try to ascertain what experiments in agriculture are most needed, and indicate the methods of conducting them.

III. To discover and define the best methods for uniform standards in the analyses of soils, fertilizers and vegetable products.

IV. To discover and define the best methods of stamping out parasites and contagious diseases of all domestic animals.

V. To aid in new discoveries, and systematize the principles of stock breeding.

VI. To endeavor to find the best combination of foods for growing or fattening animals in the various parts of our country.

VII. To make discoveries and extend the application of science in dairying.

VIII. To experiment in fish culture.

IX. To investigate insects which are injurious or beneficial in agriculture, and discover improved remedies for those which are injurious.

X. To learn and point out the best methods for testing each kind of agricultural seed, to ascertain its vitality and purity.

XI. To make investigations in vegetable physiology, especially with reference to learning how to keep plants in healthy and productive conditions. To study fungi which infest cultivated plants and point out remedies.

XII. To advance the subject of improving crops by the selection, cultivation and breeding of plants for seed.

XIII. To encourage agricultural surveys in the states and the nation and to discover improved modes of conducting them.

XVI. To encourage agricultural education, to encourage and approve good work done by any one in the United States Department of Agriculture.

XV. To encourage collecting and improved methods of arranging and presenting statistics in agriculture.

XVII. Finally in every way to encourage and help each other and others who are not members in original research in all that pertains to science in agriculture.

It is not the aim of this society to parade long lists of members or committees or to present popular addresses to please a large crowd, but to work in a quiet way for the promotion of science in its relations to agriculture.

We are unanimous in the belief that we have adopted the best plan for carrying out our objects.

While we rejoice in the prosperity of our Society and her bright prospects we have to mourn the untimely loss of one of our youngest members

Professor Robert Fairchild Kedzie died at the Agricultural College in Mississippi on February 13th, 1882, of typho-malarial fever. He was the second son of Dr. R. C. and Mrs. H. E. Kedzie, of Michigan Agricultural College, and was about twenty-nine years of age. He graduated at the college just named with a rank among the highest in 1871, although he was one of the youngest members of his class. He evinced great interest in pomology, but his especial delight was the study of chemistry, in which he showed great proficiency.

For about seven years he acted as the assistant of his father in the chemical laboratory of Michigan Agricultural College. In place of his brother he acted for one year as professor of chemistry in Kansas Agricultural College, and at another time for a few months in Oberlin College.

Several of his vacations were passed in the chemical laboratory of Prof. S. W. Johnson, of Yale College, and with Prof. F. H. Storer, of the Bussy Institute of Harvard University, where he distinguished himself by his industry and scholarly attainments.

General S. D. Lee, President of the Mississippi Agricultural College, considered himself very fortunate in securing R. F. Kedzie as his professor of chemistry. He afterward frequently expressed himself as greatly pleased with the success and solid achievements of Prof. Kedzie. Last August, at our meeting in Cincinnati, he was unanimously elected a member of this Society. This was certainly a very high honor, especially for one so young. He was looking forward with bright anticipations, intending to be present and take an active part in this meeting.

Last December Professor Kedzie was married to Miss Nellie Sawyer, of Ottawa, Kansas. It was my privilege to be intimately acquainted with Professor Kedzie, both as a student and associate teacher. His faithfulness as pupil and teacher was never excelled by any of my acquaintances. He was thorough and conscientious in whatever he undertook. He was earnest, enthusiastic, and successful, and a fine example of a Christian gentleman.

In conclusion, may our deliberations at this and all future meetings be as harmonious as they have been in the past. Like a fraternity of workers in a good cause may we be learners as well as teachers

What a broad field of research is open before us! What grand results nature will yield to our patient, honest researches none can tell. Some, most certainly. May this Society long exist and prosper and accomplish much for the promotion of science in its relations to agriculture.

The first paper read was an elaborate treatise on

"THE SOURCES OF THE NITROGEN OF PLANTS,"

by Professor R. C. Kedzie, A.M., M.D., of Michigan Agricultural College. After briefly recapitulating the work done by the French school in this direction, it went on to state that much of modern research in this field agreed with the results attained by the older schools. There must be a large supply of combined nitrogen from some source to make good the heavy annual loss of combined nitrogen or else the supply of this necessary material for plant growth must diminish year by year and starvation from failure of plant growth from want of combined nitrogen is only a question of time. This annual loss is caused by (*a*) combustion of nitrogenous materials, (*b*) in putrefaction and decomposition of organic substances. (*c*) Enormous quantities of nitrates are yearly formed in the soil, and by the rivers washed into the sea, and lost so far as land plants are concerned. The loss from all these sources is so great that the world's supply of combined nitrogen would have been sensibly diminished if not exhausted within historic times if nature did not in some way compensate this enormous waste. It is claimed that compensation is made in two ways: 1st, by the atmospheric supply furnished in rain water in the form of ammonia and nitrates; and, secondly, by nitrification in the soil, but neither seems to be sufficient to supply the demands of growing crops, and to make good the natural waste of combined nitrogen constantly going on. The theory of the French schools that plants accumulate nitrogen from the soil seems to be upheld by an examination of field operations. Two propositions have been laid down as axiomatic: 1. The composition of the manure must be determined by the composition of the plant, especially if the latter is rich in phosphorus, potassium, &c. 2. The exhausting influence of any crop is to be measured with reference to any element by the amount of this substance which the crop removes from the soil. Still these propositions often break down in practice. Thus in actual practice we find that in opposition to these rules wheat is specially benefitted by increased supplies of active nitrogen, whereas clover is not appreciably benefitted thereby. So far as nitrogen is concerned those seemingly self-evident truths are found to be false. A crop indifferent to nitrogenous manures removes the largest amount of nitrogen during its growth, and is, notwithstanding this, the best preparation for a crop requiring an abundant supply of combined nitrogen for its full development. This apparent anomaly is, however, satisfactorily explained by various authorities. If clover cannot obtain its supply of nitrogen from the free nitrogen of the air, how, it may be asked, does it derive its large supply of nitrogen under circumstances where wheat would fail to secure its smaller supply? It must secure in the soil some form of combined nitrogen from which it may derive an adequate supply, while wheat, though requiring less nitrogen, would be quite incapable of supplying itself from the same soil. The solution of the puzzle is found in the discovery that clover possesses a peculiar power of extracting its nitrogen from the "humus" or decomposed vegetable matter found in all soils. This humus contains a large quantity of nitrogen, which has been called "the inert nitrogen of the soil," which is usually regarded as incapable of supplying plants with nitrogen, as it cannot be driven off in the form of ammonia by heating with alkalies. One remarkable fact connected with this humus is that, however small the amount of nitrogen in the vegetable material out of which the humus is found, the humus itself contains about two percent. From a series of experiments on the general subject of nitrogen supply for plant growth with especial reference to the inert nitrogene of the humus of the soil, in which clean sand was used as the mechanical element of the experimental soil from which all forms of combined nitrogen had been carefully expelled by heat; swamp muck as the humus; freshly ignited wood ashes and a pure superphosphate of lime to represent the mineral elements of plant growth; the soil being placed in new flower pots and kept in a glazed room, but freely exposed to the air and watered with distilled water free from ammonia, in which medium red clover, wax beans and clowson wheat were planted, it was found that in the early stages of growth the wheat plants came forward vigorously, promising to outstrip the others. This continued until the supply of plant food in the seed was exhausted. When the growth was somewhat checked and many became sickly and weak. In the best pot of wheat four plants had two stalks each, the roots of which made a firm mat all around the inside of the pot; there were two or three nodes in the stalk, but no formation of head. The beans made good growth and full development, although slow to start. They grew 15 inches high, with six pods and eighteen beans. The red clover grew feebly at first, but soon manifested an astonishing vigor. The best plant had eight stalks, measuring from 26 to 30 inches in height, with 16 blossoms and a great number of vigorous leaves.

Prof. Caldwell, B.Sc., Ph. D., Professor of Agricultural and Analytical Chemistry, of Cornell University, then read a paper on

"THE MAINTENANCE RATION."

The preparation of a fodder ration on the basis of the chemical composition of the several kinds of fodder used, the digestibility of the several constituents of each kind of fodder, and the adaption of the composition of the ration as a whole to the special purpose for which it is fed to the animal, whether for work, growth, milk, fattening, or wool has, as all know, been attempted by German agricultural chemists and more particularly by Emil Wolff, whose tables prepared in support of this attempt have been most frequently quoted and applied. The so-called maintenance ration may be regarded as an important basis of the whole system. If it is once indisputably established what must be the composition of the ration required to keep an animal in *statu quo*, without gain or loss of weight for a considerable period of time, then it is as indisputably established that a richer ration, or one of a different composition, must be given in order to get any production of animal substance. On the other hand if a poorer ration is given, the farmer is wastefully using up animal substance as fast as his animals lose weight. Guided by the results of a small number of feeding experiments, in which the composition of the fodder was ascertained by chemical analysis, the amount of its several constituents digested was ascertained by comparing the composition of the solid excrements, and by a few others, in which only the effect of a ration of known composition was noted. Wolff has given us as the approximate required composition of the maintenance ration for a full-grown beef animal, 75 lbs of digestible albumenoids, 8.25 lbs. of digestible non-nitrogeneous matter and a nutritive ratio in which the digestible fat is reckoned as equal to $2\frac{1}{2}$ times its weight of starch, of 1 part of digestible albumenoids to 11 or 12 of digestible non-nitrogeneous matter, and with a total of 14.15 lbs of dry substance in the ration: this is the requirement per day for each 1,000 lbs live weight. Prof. J. W. Sanborn, in feeding experiments at the New Hampshire Agricultural College, has found that steers have gained for 49 days continuously on half as much albumenoids and three-fourths as much non nitrogeneous matter, and on what was very nearly equal to the maintenance ration given above he has got 1.37 lbs of increase in live weight per day; or steers have grown well on a ration in which the nutrition ratio was 1.12 and in another instance have gained 6.7 lb daily on a nutrition ratio of 1.21. With the co-operation of Prof. Roberts, of the University, the writer had been enabled to make some contribution to the settlement of the question which has been raised by Prof. Sanborn on the basis of his carefully executed experiments. Three steers, one nearly 3 years old, and the other two nearly 2 years old, were put on a ration calculated from the tables of the average composition of articles of fodder given in *Arnesby's Manual of Cattle Feeding*, when we find the composition of such American grown fodders as have been carefully analyzed, and from Wolff's Table of Digestibility of Fodder the ration thus calculated was, as nearly as could be estimated, the German maintenance ration, and consisted for 1,000 lbs. live weight per day: of cornstalks, 14.2 lbs.; clover hay, 3.8 lbs.; corn meal, 1.9 lbs., and malt sprouts, .84 lbs. The whole ration for the three animals was weighed out together, the corn stalks being cut up, moistened and sprinkled with the meal and malt sprouts, and then divided, approximately in proportion to their relative weights, between three animals. It was eaten up all but quite clean. The animals were weighed every morning after eating and before drinking. They were continued on this ration for six weeks. The average of the weighings of each successive week showed a steady though slight gain from week to week in the case of all the animals. Before the end of the feeding experiment the fodders used were analyzed, and on calculation of the composition of the ration used on the basis of its actual composition instead of the tables of average composition it was found that owing to the good quality of the corn stalks which made up so large a portion of the ration the animals had been given daily 8 lbs of digestible albumenoids instead of 75, and 8.03 of digestible non-nitrogeneous matter instead of 8.25, and 17.6 lbs. of total dry substance instead of 14.5; the nutrition ratio was 1.10 instead of 1.12. Putting all the results together it seems to show that we have not sufficient data from actual feeding experiments, several more of which the lecturer described upon which to base a system of calculation of feeding rations.

AFTERNOON SESSION.

THE CLOSING PROCEEDINGS—CONTRIBUTIONS FROM THE PRESIDENT—AN INVITATION.

CATTLE FEEDING.

Professor J. W. Sanborn, of the Agricultural Department Dartmouth College, then read a paper on "The relation between the relative and absolute quantities of food and water taken to the amounts of food nutrients assimilated." In the course of the paper it was stated that Americans have generally accepted the view that, no matter what their sources, there is little difference in the nutritive effect of digestible food constituents. Maintenance ration is a formulated standard of the Germans of the needed digestible food nutrients of a 1,000 lbs steer which requires daily ·07 lbs. of albumenoids, 8·0 lbs. of carbohydrates and 0.15 lbs. of fats all digestible. From the observation of the writer it had been noted that there was a material difference in the effects of various sources of the materials of animal nutrition For steers five years of age from 900 to 1,000 lbs., 4 lbs. of digestible albumenoids were fed, 11.18 lbs. of digestible carbohydrates and 3 lbs. of digestible fats. From this 0.8 lbs. of gain resulted. With straw, corn fodder and swale hay the result was not so good. With a feed of grain or clover and straw corn fodder, or oat straw, 10 percent more gain was made in a consumption of 9.26 lbs. of digestible nutriment. The period of experiment lasted from 70 to 104 days. Combination foods differ in efficiency per unit of digestible matter used, twelve trials with these foods giving a gain of nearly a pound per steer per day. Between a hay and straw ration the balance is in favor of hay as a digestible food. Some of the writer's best results had been obtained with rations light in the supposed required amount of albumenoids. During the past winter 13 steers of like ages and weights, and the same previous years' feeding were selected for experiment. One was killed and shrinkage noted, the other twelve were fed in lots of two each, for slaughter, on different foods. The heavier fraction of the food of each lot was grain, which would undoubtedly affect the question of carcase gain. The results of the experiment showed that an excess of albumenoids accompanied by a deficiency of carbohydrates is followed by a greater shrinkage of carcase gain. Measuring the problem by the carcase gain assumed from the standard steer slaughtered, it was shown that the extra gain or carcase of the hay and grain fed lot over the grain and straw fed was attained at an unreasonable expenditure of food. The difference in the degree of fatness of the different lots was so small that the problem was only slightly affected. It is not safe, however, to found a rule upon the result of one experiment with only six pairs of steers. A general inference was that a limited amount of coarse food supplemented by grain is more economical than an all coarse food ration. The water consumption accompanying the different foods does not afford any clue to the solution of the problem. The paper concluded by giving the results of several experiments in a similar direction, which all went to show that against a heavy ration of coarse food a limited ration of coarse food with grain is more economical if organic matter is used. Less water is also required under the circumstances and the kidneys exhale less and excrete more. Equal amounts of organic matter of unlike composition also affect both the amount of water taken and the direction of its disposal by the system.

At the conclusion of the paper a short discussion ensued in which Mr. E. A. Barnard and Drs Sturtevant and Caldwell also took part.

The meeting then adjourned until 3 o'clock.

The President, Professor W. J. Beal opened the afternoon session shortly after three o'clock and called upon Dr. George H. Cook to take the chair.

The President then read two papers on "Testing at different temperatures" and "Varieties of Red Clover." He remarked that they had more papers than they had time for and he would accordingly only submit the conclusions he had arrived at, hoping that others would follow his example.

TESTING SEEDS.

He then read a paper on "The testing of seeds at different temperatures," by means of a machine on the principle of an egg incubator, manufactured by J. L. Elizabeth, of West Elizabeth, and which runs at a uniform temperature for some days. The apparatus is heated by an ordinary number two kerosene hand lamp. With this several experiments were made in testing seeds at different temperatures.

I. Several jars holding a quart or two each were half or two-thirds filled with damp sand. Each jar contained 20 kernels of good dent corn, grown in the previous year. Previous experiments showed that the corn was in good condition to germinate. At a temperature of 120° F. seven kernels sprouted out of 180 in all. The jar containing the germinating seeds stood next the small door of the box where the temperature was probably a trifle lower.

II. In the same jars the following seeds were tested. Fifty kernels of ... Michigan, Mississippi and Texas; one hundred seeds of Turban squash and white spine cucumber, and fifty seeds crook neck squash and nutmeg mellon. Temperature 117° to 123°. Not a seed sprouted.

III. The following seeds were tested in the same manner at a temperature ranging from 110° to 115° F. Of fifty seeds of nutmeg melon all grew; of fifty seeds of white spine cucumber all failed; of fifty seeds of white spine cucumber all failed; of fifty kernels of Texas corn 10 percent grew, and of fifty kernels of Michigan corn 100 percent grew. The young seedlings in all cases soon showed signs of too great heat and died. At a temperature of 100° F. all the seeds grew and at a temperature of 95° to 100° F. an average of 50 percent grew.

VARIATIONS OF RED CLOVER.

During the past two years the writer stated that he had been studying hundreds of plants of red clover at all seasons and stages of growth, and had noticed widely different peculiarities caused in great measure, of course, by the nature of the soil and the distance of the plants from one another. Individual plants show considerable difference in the earliness of growth in spring. This is especially true of the stems which finally bear the heads of flowers. In the opinion of the writer there were great opportunities for improving red clover by selection and breeding. It is well known how wonderfully Indian corn varies. The time required to get up a race of corn is short; from four to ten years. It looks as though the same thing could be done in the cultivation of clover. The great variation in our fields of red clover is a broad hint at the results which may be obtained by study and care. Our fields of clover to-day exhibit nearly or quite as much variety of plants as would a field of Indian corn if we were to mix in a little seed of all the varieties cultivated in any one State For the Northern States a seed is wanted which starts early, grows rapidly, has numerous crests and stout small stems. The plant should be smooth throughout with thick leaves, should endure dry weather well and seed freely.

Dr. J. BURRILL, of Champaign, Illinois, then read an interesting paper, entitled,

NOTES ON PARASITIC FUNGI.

In introducing the subject, he stated that apple trees and fruit trees have suffered in Illinois and the North-West from fungus more during the present season than ever before. The unusual severity of the disease this year seemed to point to widely and general prevailing causes, viz., the character of the weather and not from insects. It is certain that fungus destroy without aid in any way from insects. If anything could be done to destroy the fungus, it seemed that the time to attack it was in the spring, before the swelling of the buds. The specially deceased twigs may be pruned away, and trial may be made of syringing with strong alkaline solutions or emulsions of coal oil. By these means practical benefits may be obtained, while injury to the tree need not be feared. Common soft soap thinned with water, if necessary, until readily showered, may be thoroughly mixed with an equal quantity of coal oil, after which ten to twenty times as much water may be added, and with this mixture the tree may be showered from a hydropult or other pump. But their greatest dependence must ever be to avoid rather than destroy the injurious fungus, and this can be done by careful selection of varieties and modes of culture. As regarded the orange rust of the blackberry, which has very often been a most destructive parasite in Illinois on the cultivated blackberry and black-cap raspberry, the opinion was everywhere held that the disease was a perennial affection, and that when a stock is once infected it so remains from year to year. Among the many remedies proposed, none except the extirpation of the diseased plants seemed effective. The trouble cannot be laid to any want of vigor of the plants or any deficiency in the soil. The blackberry and raspberry cane rust disease was next discussed, and it was remarked that if blackberry and raspberry canes could be put in paper bags, as is the case with grapes, the prevention would be as perfect in the one case as in the other. He would advise the removal of old canes as soon as fruited, and the training of young ones in such a manner, as to secure the greatest possible protection from wet. This can be done by cutting the young canes to an even height, and pushing back the laterals, so as to make a dense roof like growth of leaves and branchlets. Plantations might be kept clear of the disease by carefully avoiding the primary introduction of the fungous parasite.

Prof. J. H Comstock then read a paper on

THE BEST METHODS OF DESTROYING SCALE INSECTS.

This question is one of the most interesting and important in applied entomology. There is no growth of insects of greater interest to fruit growers than the *coccidæ*, the family which includes those insects popularly known as "scale-insects." There is scarcely any shrub or tree which is not subject to their attack and in certain localities extensive orchards have been ruined by them.

From the habits of this group of insects, the remedies available are eventually limited to such as destroy life by simple contact, and such as produce death when inhaled through the spiracles. Efforts have been made by some experimenters to kill the insects by the fumes of various substances, none of which have, however, been successful. Of powdered substances, the writer had used only pyrethrum, and was fully convinced that its use was productive of more harm than good. The effect on the insects themselves is almost inappreciable, while the parasites of the insects were killed in great numbers. There is nothing better than pyrethrum for the destruction of certain kinds of insects, but there is a limit to its successful use.

Of all substances with which experiments have been tried up to this time two have been proved to be eminently successful. These are solutions of soap and lye. A solution of soap made in the proportion of three-fourths of a pound of soap to one gallon of water which will destroy every scale insect it reaches and has no injurious effects on the plant. Whale oil soap was that used, but ordinary soap would probably do as well. The fruit growers of San Jose, California, have also used lye with great success in the proportion of from half a pound to one pound of lye to one gallon of water. The trees are wetted with this at the time of the year when they are dormant. Kerosene has also been used for the same purpose, but is liable to injure the trees.

The best means of applying the poison is by means of a stiff brush, by which method many of the insects are destroyed mechanically, and others which take refuge under the loose bark are reached. The greater number of those insects, however, infest the bark of the smaller branches, and to reach these is a difficult matter. It can be done best by means of water and some kind of force pump, the remedial agent being diluted with water and the mixture then sprayed upon the infected plant. In the case of smaller plants and shrubs the spraying is a simpler matter.

EXPERIMENTS WITH INSECTICIDES.

Dr. A. T. COOK then presented a paper giving

the results of a number of experiments with different insecticides, the principal object of these being to determine with some degree of accuracy the extent of danger involved in the use of arsenites for the destruction of the cabbage butterfly, the currant saw fly and other insects infesting the garden. His conclusions were that all should be very cautious in the use of poisons as virulent as the arsenites commonly employed. He did not hesitate to say that it was perfectly safe to use them to destroy the first brood of cabbage worms, or to use them on the foliage of any of our fruit trees if the fruit is not to be used for five or six weeks. If the currants were thoroughly raised, there would be no danger of using the arsenites in fighting the slugs. In case of the codling moth there can be no possible danger in the Eastern States in using the arsenites, and from experiments the danger is shown to be very slight even in rainless climes like California. He had no doubt but that the danger from the use of these poisons is far greater from carelessness in leaving them around where stock will get at them, and where, through mistakes, they may be taken for medicine, or mixed in food, than will ever arise from using them in such cases as mentioned above. From the peculiar structure of the cabbage I should never recommend their use to destroy the second brood of cabbage worms.

Dr. COOK then gave an account of certain experiments with bees which threw some light upon certain doubtful habits of the insect. He said he had no doubt but that bees if long confined in their hives and irritated either by too great cold or too great heat, or continual disturbance as by jarring, will have to void their fæces, and if they cannot fly out they will discharge these excreta in the hives, but this will never be dry, but always semi-liquid. He next endeavored to ascertain whether Mogo bees eat pollen, and the fact that abundance of pollen was found in their alimentrry canals proved that they do it. Careful experiments have shown that the eating of too much pollen by bees during the confinement of winter may give rise to dysentery and cause the fatality so much dreaded by bee-keepers, and that bees without pollen in the hive might winter more safely. But experience also showed that bees cannot rear brood without pollen.

ABSORPTION OF MOISTURE.

Dr. B. D. Halsted then presented a treatise on "The Absorption of Moisture by soils under varying Conditions," written by Dr. E. W. Hilgard, which discussed the researches of Knop in the absorption of moisture from the atmosphere by arable soils. He deduced from his observations a law expressing the relation between the temperature and the amount of moisture absorbed by different soils expressed. The amount of aqueous vapor absorbed is approximately proportional to the squares of the temperature, when the thermometer degrees are counted from the boiling point downward. The writer had come to the conclusion from experiments that for temperatures between 7 and 21 centigrade, the co-efficient of absorption might for practical purposes be considered constant. He was convinced of the inaccuracy of Knop's law and of the need of a further investigation of this interesting phase of agricultural physics. The absorption experiments with atmosphere of a definite degree of partial saturation required difficult experiments, the results of which showed two important facts, namely, in the case of the saturated atmosphere a decided increase with the temperature of the moisture absorbed in all cases; in the case of the half-saturated atmosphere the rule is reversed, the amount absorbed decreasing as the temperature rises, but only to a very small extent. Now, if the amount of moisture absorbed by soils increases with the temperature in the case of a saturated atmosphere, while in the case of a half-saturated one it decreases, the inevitable inference is that somewhere between these two degrees of saturation there is a critical point at which, within the limits of temperature used in the experiments, the amount of moisture absorbed remains unchanged, and should this conclusion be verified it would show a very remarkable provision for the maintenance of a certain steadiness in the hygroscopic condition of soils tending to mitigate the effects of violent atmospheric changes upon growing crops. Material difference, however, will be found to exist between soils of different constitution, in other words, clay soils are steadier in respect to their moisture condition than the lighter soils, whether humid or not.

COTTON SEED.

Professor F. A. SULLY, of the State Agricultural College of Mississippi, then read a paper on the food value of cotton seed. After showing that a large proportion of the cotton seed at present goes to waste, he went on to show its value if used for feeding cattle, a value which he had determined by experiment. Cotton seed cake or meal is especially rich in nutritive matter, and is the most valuable vegetable product we have for combining with coarse forage of the farm for the production of fat on the animal, or the making of rich manure. One ton of the meal is equal to four tons of corn for the latter purpose. The whole cotton seed, as it comes from the cotton gin, when cooked, makes a valuable food. Estimating the cotton seed at ten cents per bushel, the cost price, delivered at the college barn, and oat straw and coarse hay at ten dollars per ton, the average cost of food consumed per head per day of the college cows during the past winter was seven and three-tenths cents, cows averaging one and one-half gallons of milk per day. Dry cows and yearling calves cost four and one half cents per day for food consumed. One steer fed for beef, weighing 700 pounds when shut up, gained 260 lbs. live weight, or an average of over four and one-half pounds per day, consuming an average of fourteen and four-tenths pounds of seed per day and eleven pounds of straw and hay. Average cost of food per day not quite ten cents; cost for whole period $5.42. Another steer gained 240 lbs. in 49 days, consuming $3.78 worth of cotton seed and hay. The experiments at the college show that boiled cotton seed with any kind of straw or hay will cause cattle to fatten rapidly, no matter how poor in condition. It also makes very rich milk, the oil of the seed seemingly appearing in the milk in the form of cream. The quality of the butter, however, when the cows are fed largely on cotton seed, is poor. The College is now preparing to test the value of cotton seed and its products for food and manure on a somewhat extensive scale, hoping to establish approximately the value of the seed for these purposes.

The PRESIDENT then announced that this was the last paper to be read, and after a short discussion the meeting adjourned.

EVENING SESSION.

A business meeting of the society was held in evening at the rooms of the Natural History Society, the President in the chair. After some preliminary business the following resolutions were moved and unanimously adopted:

Resolved,—That the thanks of the Society for the Promotion of Agricultural Science are hereby tendered to the American Association of Science, for the courtesies, and friendly assistance so generously accorded to them.

Resolved,—That the thanks of the Society for the Promotion of Agricultural Science are hereby tendered to Principal J. W. Dawson, LL.D., and the officers of the Natural History Society for the use of their room, and for courtesies received.

Resolved,—That the thanks of the Society for the Promotion of Agricultural Science, be hereby tendered to the Montreal Press for its full and careful reports of the papers read before the Society."

The congress then adjourned.

JOHN BULL is a fine strong fellow, and not ungenerous; but he is curiously inconsiderate of the feelings and susceptibilities of others; For instance: all the world knows that England is one of three countries joined together as the United Kingdom of Great Britain and Ireland. Unfortunately there is no one word to express this; but an attempt at all events is made in styling our Queen her Britannic Majesty, and our Government the British Government. This is galling enough to Ireland, but at all events it recognizes Scotland. Yet our English newspapers persist in the habit of referring everything that is done to the power of England only. Victoria is Queen of England; and we read of the English Government, the English Army and Navy. This style of ignoring other parts of the United Kingdom is very strongly marked at the present juncture. All the comic papers show us what John Bull is about in the East, and make him very big; and the daily papers are full of what the English do and mean to do. They seem to forget that the Ambassador at Constantinople is an Irishman, and that if the Admiral at Alexandria is English, the General (Sir A. Alison) is Scottish. The General-in-Chief, who is to have the supreme command, Sir Garnet Wolseley, is Irish—while the Commander of the Expedition about to leave the shores of India, Sir Herbert MacPherson, is Scottish. There is no malice in this English self-assertion. It is a sort of clumsy fault in the national character.—*The Outlook (London).*

AMERICAN FORESTRY CONGRESS.

THE OPENING SESSION—GREAT INTEREST MANIFESTED—THE HON. MR. JOLY ELECTED PRESIDENT.

MONDAY, August 21.

The Forestry Congress began its session at two o'clock this afternoon in the well appointed chambers set apart for the use of the association at 132 St. James street. Over a hundred gentlemen were present, comprising, besides members of the Congress, many of our leading citizens, with several influential gentlemen from other parts of the Province and Dominion.

Prof. Hough nominated, in the absence of the President, the Hon. H. G. Joly, one of the Vice-Presidents, as President of the Congress. The nomination was enthusiastically ratified. Mr. Joly took the chair.

Prof. Hough was elected Secretary, and Chas. Moore, of Alabama, as temporary Treasurer.

The President briefly explained the objects of the meeting, and announced the order of proceedings by sections.

Prof. HOUGH announced that the officers of the sections, as appointed at the Cincinnati meeting, would continue in office until the election of new officers. He moved the appointment of a committee consisting of Chas. Moore, Bernard Fourneaux and Wm. Saunders to take into consideration the relations between this Congress and the American Forestry Association.

Mr. J. A. WARDER, first vice-president of the Association, said the American Association had come here prepared to co-operate with this Congress, and to submit to whatever the committee should recommend to-morrow. The Association had done a great deal of good during the last seven years, but they were even prepared to abandon their organization, if necessary, in the interests of American forestry.

Mr. C. E. Belle, Crown Timber Agent for the Province of Quebec, offered for the inspection of the Congress, a box containing forty specimens of Canadian woods. They were excellent specimens, some of them polished, and were greatly admired.

The Congress then adjourned and meet immediately afterward in sections at three o'clock.

The following is a list of the delegates from a distance:

B—Bureau, Senator, St. Remi; Butler, A. W., Brockville, Ind.; Beall, T., Lindsay; Broster, C., Three Rivers; Beadle, D. W., Barnes, Wm. S., Baskerville, P., St. Catharines; Bergeron, J. G. H., Beauharnois; Brigham, Dr., Phillipsburg; Bell, C. E., Representing Crown Lands Department, Quebec; Beaufort, E. L., Cape Vincent, N.Y.; Brisebois, E. C., Minnedosa, Ma.

C—Chandler. —, Chicago; Chaffers, Hon. W. H., St. Cesaire; Chapais, J. C., Varennes; Crebassa, J. G., Sorel; Chapman, C., Toronto; Cowper, G. B., Toronto; Charlton, E. J., Quebec; Charleson, J. B., Quebec; Cuthbert E. O., Berthier; Chester, F. W., Quebec; Chandler, G. H., St. John, N. B.

D—Dean, Harmon, Shelby Co., O.; Denton, J. M., London, Ont.; Dempsey, P. E., Trenton, Ont.; Dunn, L. H., Quebec; Dall, Caroline H., Washington, D.C.; Dwyer, G. F., Suttonville; Dwyer, E. A., Sutton; Dougall, J., Windsor; Dawes, T. H., Lachine; Desrivieres, F. G., Desrivieres; Dougall, John, New York; Du Vernet, F. H., Toronto.

E—Emerson, N. P., Sutton Junction; Emery, Dr. J. G., Port Burwell; Emery, Vernon H., Hamilton.

F—Fernow, B. E., Statington, Pa.; Fyles, Rev. T. W., Cowansville; Field, J. G., Stanstead; Fulton, Rev. James, Lachine.

G—Guilbault E. M. P., Joliette; Gillies, Jas., Carleton Place; Gillies, John, Braeside; Gibbs, Hon. Thos. N., Ottawa; Gleed, C. S., Topeka, Kansas.

H—Hough, Prof. F. B., Washington; Hicks, J. S., Roslyn; Hope, Jas., Toronto; Howard, J. W., Chambly; Hyatt, Jas., Stantonville, N. Y.

J—Joly, Hon. H. G., Quebec; Jones, W. J., Bowmanville; Jouette, S. N., New York.

K—Kinsey, Chas. E. Cincinnati, O.; Kay, Andrew, Granby, P. Q.; Keefer, T. C., Ottawa; Kerr, Thos., Toronto; Kerr, Walter, Kemptville, Ont.; King, Rev. E. A. W., Levis, P. Q.

L—Little, L. G., New York; Little, J., Cote St. Antoine; Logue, C., Maniwaukee; Lynch, Hon. W. W., Quebec.

M—Mohr, Prof. Chas., Mobile, Ala.; Martin, J. R., Cayuga; Malhiot, Hon. H. G., Three Rivers; Manning, J. W., Manning, H. G., Reading, Mass.; Mills, W. H. Hamilton; Miles, H. R., LL.D., Quebec; Moffatt, J. R. G., London, Eng.; Mills, W. B., Beaufort, N.B.; Martin, R., Martin, E., Martin, W. R., Hamilton; Mitchell, C. W., Ottawa; Massue, L. H. Varennes; Mills, Jas. M.A., President Agricultural College, Guelph; Morris, D., St. Therese; McConville, P. W. Joliette.

N.—Norman, J. B., Three Rivers; Nagle, R., Ottawa; Norris, John, Roseabel Ely.

P.—Painchaud, Dr. C. F., Varennes; Pardre, Avern, Toronto; Peffer, Geo. F., Pewanee, Wis.; Perrault, J. H., Varennes; Pell, D., Pembroke.

Q.—Quinn Stephen, J., St. Hyacinthe.

R—Russell, A. J., Russell, J. Haig, Ottawa; Renaud, Eugene, Montmagny; Ritchie, William, Three Rivers; Russell, A. G., Ottawa; Rodriquez, J., Jacksonville; Ross, W. G., St. Nicholas; Robitaille, L. A., Quebec; Rully, Jas., Sherbrooke.

S—Saunders, W., London; Studer, J. H., Columbus, O.; Stetson, John, Toronto; Stephen, John, Chicago.

T—Tache, E. E., Quebec; Thistle, W. N., Ottawa; Tracy, W. W., Detroit, Mich.

U—Ulrich, Alfred, Dresden, Saxony.

W—Warder, Dr. J. A., North Bend, O.; Wilson, H. W. Boston; Whiteside, E., Cambridge; Winnett, W. H., London, Ont.; Westover, D., Freligsburg.

Y—Young, W. C., Ottawa.

SECTION A.

Professor Hough, of Washington, took the chair in this section, which was more fully attended than either of the others, and Mr. Little acted as Secretary. Work was at once begun by the reading of the first paper.

FOREST FIRES.

Mr. Joseph S. Fay, Wood's Hall, Mass., made a single brief suggestion—that new plantations should be made in blocks of 10, 20, 40 or even 100 acres, divided from each other by at least 100 (even 300) feet. On Cape Cod it is found easier to check fires in woods intersected by wide roads. A good open road is a good *point d'appui* from which to resist a fire or start a back fire. And a fire that would moderately injure an old open forest, as in the wire-grass pine lumber regions of the South, is utterly destructive to trees a few years old.

HARD WOODS IN THE GULF REGION.

Prof. Mohr then read part of a long paper on the "Hardwoods of the Gulf region of America," after which Prof. Hough vacated the chair and read a paper on

TREE PLANTING BY RAILWAY COMPANIES.

DR. HOUGH, introducing a paper on this very interesting subject, said that there being in the States about 100,000 miles of railway, and the future increase of railways being indefinitely great, the advisability of tree planting by railway companies for construction and maintenance was an important question. From 2,200 to 3,000 ties, and sometimes 3,500, are used in every mile of rails, and those of the United States would span the earth 15 times at the equator. The average duration of a tie is 5 to 8 years, and 30 to 50 millions a year will be required for the 100,000 miles of rail. Roughly putting 500 ties as the product of an acre of woodland, then from 60,000 to 100,000 acres will have to be cut every year; and as a tree must grow, on an average, for 30 years to come to the right size, the railways will need from 2,000,000 to over 3,000,000 acres, or 3,126 or 4,687 square miles of forest to keep up the supply. In Europe the ties are made more durable by preparations costing 6c to 20c a tie, but the low price of wood prevents that here. At the above rates, there should be 25 acres for every mile of road, involving an investment of $500 in land per mile. This would be a wise investment, giving the railways an independent supply of ties. Contractors might be found for the planting and care of such woods. Fortunately, wood fuel is being superseded by coal, and wooden bridges by stone and iron; in Europe, wood in railway structures is very rare. As for ties—stone ties failed in the United States; iron castings are necessary to defy the ants in India, and are used in some lines in Europe. Mineral substances will be dearer than wood for some time. Trees should also be planted by railways to hold embankments together by their roots, and alders and willows prevent erosion by streams. The kind of tree would vary, of course. Pines are liable to suffer from fire, and birches, &c., are sometimes placed along railway tracks through pine woods in Europe. Trees along the track would do much to prevent snow blocks. The Northern Pacific in Minnesota and Dakota plants all the exposed part of its track with trees. Several railways in the Northern and Western States plant trees, partly for this reason, partly to show settlers that trees will grow there. In Russia and other countries attention has been successfully given to this question. Along railways on prairies the soil has to be deeply broken, and the trees cultivated till they shade the ground. Locomotive and prairie fires must both be guarded against by burning off, at the proper time, the dry herbage. The care required is less as the country is settled. The comfort to the traveller from the shade is doubtful, the flitting shadows being painful to the eyes, and, as in Northern Italy, the trees shut out the scenery.

RATIONAL TREE PRUNING.

Mr. N. H. Egleston, Williamstown, Mass., read a paper on the "Rational Method of Tree Pruning." After condemning the thoughtless lopping of trees, he said that by a rational method a forest will yield much more than when left to itself. This was known in Germany 250 years ago, and pruning was renewed in this century, and is now practised on the Continent. Des Cars' treatise has been translated into English at Harvard. The essential thing is to cut off a branch as close as possible to the trunk, no matter how large the wound. The descending sap that makes the new wood cannot do it if a stump projects from its line of descent. The wound may be painted with coal-tar, from gas-works; this has been proved to be the best in the Paris parks. If a stump is left it decays, and the rot goes into the tree. Trees grow higher when pruned, and are thus more valuable. Forest trees less than 40 years old should be deprived of their branches one-third of the way up; of 40 to 80 years, two-fifths the way up, and of 80 and upwards half the height of the tree.

HARDWOOD TREES IN THE GULF REGION.

In the paper which Dr. Charles Mohr read on the above subject, full of scientific research, he said that about 128 species of trees are found in the region bordering on the Gulf of Mexico, and these include some of the best known hardwood trees of America. The *Quercus virenes* or live oak, from its beauty and the excellent quality of its timber, takes the first place. It is of a low, sturdy growth, and reaches a diameter rarely exceeding two and a half feet and attains a height of from sixty to sixty-five feet. The wood offers a striking instance of the compatibility of rapid growth with strength and durability. The swamp chestnut oak, *Quercus Michanizi*, is a tree of decided southern distribution, of a diameter of two to three feet, and a height reaching one hundred feet and over. It is regarded as the most important timber tree of the South. The Willow Oak is one of the largest trees of the South, its trunk attaining sometimes a diameter of twelve feet two inches. The White Oak is used extensively in ship building and the manufacture of implements, but it is becoming very scarce. The Tan Bark Oak is a considerable source of revenue to the Gulf region, 12,000 cords of the bark being shipped annually from Alabama. Then there is the Spanish oak, valuable for shipbuilding; the water oak, popular as a shade tree; the black Jack, common in porous soils; the chestnut, beech, birch; two species of poplars, which sometimes reach a diameter of eight feet; hickories, walnuts and ashes. Trees over a hundred feet in height and four or five feet in diameter are not rare.

THE RUSSIAN MULBERRY.

Mr. D. C. Burson, of Topeka, Kansas, could not attend, but sent a short paper. He said that the Russian Mulberry was coming into great use on the western prairies as a tree to bring returns to the present generation. It was brought from Western Russia by the Mennonites, and seeds were also got direct by Mr. E. H. Rondebush, of Topeka. It is a cross between the black mulberry of Persia and a native Russian variety (*Morus tartaraca*). It grows rapidly, stands transplanting well, and is ornamental. The fruit is very good and plentiful, and the wood is as durable as red cedar, and useful for furniture; the leaves are the best food for silkworms. Trees sown seven years ago are now 25 feet high and 6 to 8 inches thick.

ADVANTAGES OF THE EUROPEAN LARCH.

Mr David Nicol, of Cataraqui, Ontario, contributed a paper on the advantages of the *Pinus Larix*, or European larch. Besides the Siberian and Chinese larches, there is the American, or tamarac, which when young can hardly be distinguished from the European. Each was minutely described; among other things, the American has cones only one third the size of the European. The latter is quick growing, and reaches 60 feet in height. It brings the quickest and most certain returns to the planter, succeeds well on poor land and in almost any climate. Where plentiful it is preferred to other pines. Its wood is the best for ship's masts and spars and in Europe is much used for shipbuilding. It is very strong and does not warp or shrink. The larch piles on which Venice was built centuries ago are said to be as fresh now as then. Its resin makes it better than pine or cedar for shingles; it is white when young, and red later on; it resists the boreworm, and is used for carriage building in Italy. One of its valuable products is the "Venice turpentine." It is a beautiful tree as an ornament. The cones should be gathered in the beginning of winter and as early as the ground permits in the spring the seeds should be taken out and sown in fine beds of sandy loam, with compost above, and planted out the next spring 4 or 5 inches apart. Left one year thus, and then kept two years 15 inches apart, in rows 3 feet apart, they are then 4 to 6 feet high and ready for exposed situations. The larch should not be planted with other trees. At 3 feet apart in 6 or 7 years they will be 20 feet high, and 4,900 trees to the acre if cultivated the first 3 or 4 years. Every alternate row should then be taken out, and as hop-poles would fetch, at 5 cents, $122.50. Three years more, and every alternate tree in the row should come out (1,225 boat spars, at ten cents, brings $122.50). Five years more, thin them out to 12 feet apart; the thinnings, 612 rafters or spars, 30 feet high and 7 to 10 inches through, would fetch, at 25 cents, $135. The trees remaining would be worth $135, and fifteen years, rent would only have been $30. Sheep can be then safely pastured. When mature, 50 years old, the trees average 30 to 40 inches through (3 feet from the butt), and after deducting for sawing and drawing, $2.25 per tree, the 612 trees might be valued at $9 apiece, or $5,499, or $5,429 and 35 years rent. And the larch puts more into the groun , by leaves, than it takes out. Much valueless land in the States and Canada would be made valuable by larch planting.

Mr. M. C. Read, of Hudson, Ont., read a paper on

THE COPPICE FOR THE VILLAGE AND FARM.

The coppice, he said, was a forest in miniature, which may be cultivated in the immediate neighborhood of villages and farm houses where trees can be only sparingly planted. Mr. Read prefers a smooth, well kept lawn to trees as an ornament to a village or farm, but owing to the climatic and other advantages arising from the neighborhood of thick wood, he advocates the utilization of a valley or unused corner in rear of the village for the planting of a coppice where trees and shrubs should be crowded without order in such numbers as will prevent the growth of grass beneath them, and with such a mixture of creepers, vines, and low growing herbaceous plants as to form a dense thicket impenetrable to man or beast. The beauty of such a thicket consists in its native, untrained wildness, and if adjacent to a well kept lane, like two complementary colors brought together, will each enhance the beauty of the other. In laying out village plots, if a block of forty square rods or so were reserved for a coppice, each lot abutting thereon, the sanitary effect would be excellent in many ways. The soil of almost every village becomes so polluted with offal as to poison the wells of water, while a coppice at the rear of each lot would drain the offal, and by absorbing the effluvia would increase the salubrity of the region. In the case of farms, patches of waste lands might be utilized in the same way. Every such coppice would serve the climatic and sanitary purposes of a tree forest, besides affording, in the course of time, timber for farm use. Mr. Read states that he has this summer made chemical tests of the water of forty-seven village wells, and all but four of them gave evidence of defilement from kitchen slops or human excreta. If the drainage of each lot were carried by pipes into a coppice, the rank growth thereby induced would absorb and neutralize the poison and greatly increase the healthfulness of the region.

FOREST TREES MOST SUITABLE FOR STREETS, LAWNS AND GROVES.

J. Beaupont Hurlbert, LL.D., of Ottawa, in a paper on this subject, which he gives as suggestive only, presents a list of some thirty trees that he considers most suitable for ornamental purposes. Of the seventy to seventy-five forest trees, and the thirty to forty shrubs, of Canadian growth, he would give the preference, for streets and lawns, to the maple, elm, basswood, beech, birch, oak, butternut, walnut and ash.

THE PRESERVATION OF FORESTS.

Mr. John Dougall, editor of the New York *Witness*, read a paper on "The preservation of forests from wanton destruction; and on tree planting." The virgin soil, fed by the decaying vegetation of ages, had been bared and used up in a few years by continual cropping; in one case excellent bush land had been reduced to mere rocks and stones in ten years. The labor of properly working timber made the trees looked upon as enemies, and were ruthlessly swept away, leaving the land exposed to bleak winds, droughts, and floods from quickly melting snow. When these effects were perceived people began by keeping a grove on each farm, and this became most valuable. Laws were passed, and Mr. Schurz, Secretary of the Interior, did his best to carry them out, to preserve the forests in the territories. But lumbermen can do much in far districts without it being known, and carelessly lit fires are still more disastrous. The only true remedy is a national forestry law, such as in France, Germany, Austria, Norway and other European countries, to protect trees from fires and from unauthorized cutting, to cut and sell the old trees while young trees are growing, thus bringing in a constant revenue and preserving the woods too. By judicious thinning the supply may be great and yet maintained. Each state should have a Department of Forests, to persuade and advise farmers to preserve and plant forest trees. The American law granting 160 acres on condition 40 acres are kept some years in timber, has had a good effect on the timber supply. A good spirit is shown in many towns by having an "Arbor Day" in spring for tree planting. Trees along roads would give shade, and a broad belt along the windward side of railways would keep off the snow and also be a supply of wood. Every farm should have a belt of trees, at least 50 feet wide, on its windward side. Swamps should be planted with white and red cedar and tamarac; their timber is valuable and their leaves absorb bad gases. Rocky places should be sown with seeds from the forest as soon as ripe, and protected while young from cattle. In ten years the annual thinnings would make this as valuable as any part of the farm, and the selling price would always be increasing. There should be a scientific and expert Commissioner of Trees to advise on the right sort of trees to be planted. There is great need for planting for some way down the St. Lawrence from Montreal, and still more need in the North-West, where every year as the land is taken up the task will become harder. The other provinces have systems calculated to preserve the forests, but there is need for care against fires. There should be a Commissioner,—not only an expert, but an enthusiast in forestry.

A FOREST PLOT ON THE FARM.

Dr. J. BEAUFORT HURLBERT, of Ottawa, gave "A few thoughts on the necessity for a certain portion of each farm being left in forest." We know that rain falls in summer where the woods have been removed, and the springs have less of the water that does fall. In Europe the governments have ordered the resetting of forest trees. Twenty-five out of one hundred acres might be left in forest, especially the rocky portions of the farm. In granting forest lands, the Government could make this a condition of the sale or grant, and encouragement should be given to re-plant denuded farms.

SECTION B.

This section was organized under the presidency of Dr. John A. Warder, North Bend, O., Chairman of the section.

The Hon. Spring Rice was elected Secretary of the section.

The CHAIRMAN read the list of papers, and at the request of the meeting read a paper upon

TREE PLANTING FOR RAILWAYS.

He said the planting of large sections of country with trees by railway corporations is an object of great importance. Owing to the delay in getting returns from tree planting individuals can not so easily be induced to embark in these enterprises as corporations. Such an investment is one of the surest that can be made by any corporation. Railway corporations hold enormous tracks of prairie lands just where forests are most required. There is no doubt the disastrous storms and hurricanes now prevailing in the western country, would be greatly modified by the cultivation of forests. The almon of Northern Pacific railways has begun the planting groves of trees about the station houses, even where irrigation is required. The Missouri River, Fort Scott & Gulf Railway, of Kansas, have planted entire sections along their line. The Catalpas planted by this Company in 1878 have already reached ten feet in height and two and a half to three inches in diameter.

As soon as the young trees become large enough to shade the ground and so keep down the trees, they require no further cultivation, and no further attention until the time of thinning. The Western Catalpa, indigenous to the western country, affords a wood so hard as to be almost indestructible, and therefore very suitable for railway ties and fence posts. Before a crop of trees now planted can be harvested, the price of ties and posts will at least be doubled. Catalpa ties have stood for twelve years under daily and heavy use, and even then many of them were still so sound as to need only to be turned over to serve another series of years.

The CHAIRMAN admitted that cedar grew rapidly but was not durable. Cedar, to be durable, required a growth of from one to two hundred years. Only the red wood of the heart was durable. It was a wonderful fact in the catalpa that even the sap wood was almost indestructible.

Mr. BEAUBIEN said he did not know much in Canada about the catalpa, but he doubted if it was more durable than our Canadian cedar. The cedar grew very fast, also, and he thought in all respects it could not be exceeded in value by the catalpa.

A gentleman asked if Mr. Beaubien referred to white or red cedar?

Mr. BEAUBIEN said that he referred to both. On his farm were cedar fence posts fifty years old, and only an inch or two of the exterior was at all affected. Did the chairman think the catalpa would grow in this country?

The Chairman said he had great doubts of its growing in Canada, though he observed that Mr. Burnet, of Pictou, N.S., had a paper on the Canadian culture of the Catalpa.

THE CATALPA IN CANADA.

Mr. Robert Burnet, of Pictou, N.S., contributed some "remarks on the Canadian cultivation of the *catalpa speciosa*. As a test whether this very useful tree would grow north of parallel 42, in the spring of 1880, 100 plants from Illinois were set near Pictou, (45½ north latitude) on a sharp, gravelly soil with a south exposure. They were protected from sun and frost, and this spring were distributed. All the reports of their progress are very good. There is every reason to hope that the complete naturalization of the catalpa, as suggested by Dr. Warden, of the Bend, Ohio, will be accomplished.

TREE PLANTING ON CAPE COD.

Mr. Joseph S. Fay, in a paper on "Experiments in tree-planting on Cape Cod," said that the soil was simply *diluvium*, or drift, but the forests used to supply some ship timber. Of late the trees are mainly cut for fuel. Sheep-keeping has now been given up, and experiments made in tree-planting. The native pitch pine (*pinus rigida*) did not succeed, being subject to a blight, said to be a fungus, on the leaves of the young growth. The Scotch pine, sown on worn-out pastures at the south-west end of the Cape, promises very well, being a rapid and healthy grower and hardy. The foliage of the white pine is injured by winds blowing off the salt water. The European larch and Scotch birch have been somewhat planted and are doing well. They are hardy and rapid growers. The progress of the catalpa is also encouraging. Attention is more and more given to tree planting, as nothing seems likely to be so profitable on those light lands.

THREE MOTION PLAN OF PLANTING.

In the absence of the author of the paper, Mr. Robert Douglass, of Waukegan, Ill., it was read by the Chairman.

The culture of trees requires careful preparation of the land before planting the seedlings. The soil must be broken up, and all the grass roots completely destroyed. The ground is then rolled and marked out in furrows four feet apart each way, the tree being planted at the intersection. The paper gives directions for the economical planting of large extents of land, the mode requiring but three movements on the part of the planter—hence the title of the paper. As many as 4,500 trees can be planted in one day by this method.

PLANTING ON THE PLAINS.

Mr. H. W. Pennel, of Russell, Kansas, sent a communication dwelling on the want of protection of those open regions from the winds which have a free sweep of hundred of miles. The only way to break up these winds was by planting trees. In his own experience, at least half of his 6,000 black walnuts are in fruit this season; 3,500 ash-leaved maples transplanted this spring, are making fine growth in spite of the severe drought. Many people having tree claims have been successful in planting Osage orange. He gives honey locusts the preference as a wind breaker and for hedges. The cottonwood has been his worst failure and the black walnut his best success.

SECTION C.

This section opened at three o'clock p.m., with Prof. Wm. Sanders in the chair.

THE COMMERCIAL VALUE OF PRUNING.

Mr. John S. Hicks, of Roslyn, N.S., communicated a paper on the above title. If the lower branch of young trees are not cut off, then loose or black knots will appear in the timber. Often a branch will rot and the rottenness goes to the heart of the tree. Knots can be kept sound by the branches being cut off while alive and quickly overgrown. One hickory tree that was not worth splitting for fire-wood might have been worth $30 to $50 if a few hours had been spent in pruning. Hickory, oak and chestnut all show the result of decayed branches. Clear pine has nearly doubled in value in the past ten years, and is still increasing, while common or knotty pine has only risen a few dollars. We will not long have the old growth to draw from, and when the trees have to be planted the neglect of pruning will be severely felt. The increase in value of a wood free from decaying branches will be more than the expense of pruning.

AN APOLOGY FOR THE PIONEERS.

The Hon. J. W. Caldwell, of Cincinnati, Ohio, President of the Cincinnati Pioneer Association, wrote affirming that none had done more for the advance of the country than the two first generations of pioneers, and asking gentle treatment for them. The pioneers had to clear the ground, and though they lost the forest they gained sustenance for increasing millions of population. There was no market for their lumber, so it was burned; those millions have now made a market. As to what is now to be done—each person must plant two trees for one that he fells. The writer is the first American born and oldest survivor of the first Irish immigrant family that settled North-West of the Ohio River, and his father kept one sixth part of his 300 acres as primeval forest. As to legislation—the road tax might be remitted to farmers who plant their road sides with trees, or a proportion remitted according as he plants trees on his farm. The *Navigator*, published at Pittsburg in 1808, spoke of sycamores 16 feet thick at 4 feet from the ground, and from what he had seen he could believe it. The black locust, black walnut, wild cherry and poplar are all rapid growers and valuable as timber.

THE PUBLIC MEETING THIS EVENING

will take place at the Queen's Hall at eight o'clock. Addresses of great public interest will be delivered by the Hon. H. G. Joly, Dr. Franklin, B. Hough, Chief of the Forestry Division in the Department of Agriculture, Washington; Dr. John A. Warder, North Bend, Ohio; D. W. Beadle, of St. Catharines, one of the representatives of the Ontario Government, and others. This meeting, and that of to-morrow evening, are open to the public.

Mr. WM. RONB, the City Auditor, then read a paper on the

"TRUE AND FALSE IN ARBORICULTURE."

The original struggle with the primeval forest had left a legacy of antipathy to all who recall it. That which should have been the friend and companion of man came with very few exceptions to be regarded as his enemy. That idea is, however, dying out. Errors in arboriculture however still exist, chiefest among which is that of pruning or removal of branches. The general custom when pruning is necessary is to cut the branch several inches away from the parent stem. This ensures the spread of decay from the branch to the trunk and the death of the tree is thenceforth regulated by the number and extent of such amputations. A branch lopped off otherwise than close to the stem from which it springs must shrivel up, rot, and carry decay back into the heart of the trunk. A branch cut off close to the stem soon heals over, however, and leaves a scarcely perceptible scar or mark and adds to the vigor and health of the tree. In a matter so simple, but so important correct information should be universal and should form part of the curriculum of our schools.

Messrs. Dyer, Emerson, Martin and Marler, then briefly discussed the points raised in the paper.

THE DENUDATION OF OUR FORESTS.

Mr. G. L. MARLER read a paper on this subject. The Province of Quebec, which supplies most of the timber for the lumber trade is contains—1st (deciduous trees), oak, elm, ash, birch, walnut, butternut, hickory, ironwood, maple, basswood, white birch, beech, poplar, cherry, Balm of Gilead, plane and willow; 2nd (evergreens), pine, spruce, larch, cedar, balsam and hemlock. One large belt of timber, about 30,000 square miles, runs from Gaspé to the head waters of the Connecticut River, and thence along line 45 to the St. Lawrence. The Northern belt runs from below the Saguenay to the Ottawa, and thence 200 miles north of the St. Lawrence—about 120,000 square miles. This belt is no longer only approached from the rivers, but is intersected by a dozen railways, and in ten years there will be no timber in it. The Government's gross returns from forests last year was $24,802,064, a fourth of the whole dominion exports, and an increase of $2,000,000 over 1871. In 1871 the amount of timber cut, as reported to the Government, was—White Pine, 24,236,821 feet; Red Pine, 1,954,371; Oak, 3,302,043; Tamarack, 5,695,963; Birch, 1,939,357; Elm, 1,639,624; Walnut, 117,589; Butternut, 102,981; Hickory, 197,827; other kinds, 26,290,264 feet; Pine logs, 12,416,408; other logs, 9,314,557; masts, 121,685 feet; staves, 34,706 m.; lath wood, 25,706 cords; tan bark, 162,521 cords; firewood, 8,713,083. This makes an aggregate of 22,271,384 trees. Putting 50 trees to the acre, this means 445,428 acres, equal to one township, denuded in one year. The ten years since then will have denuded about 3,240 square miles, or 30 townships. This, without counting the home consumption, which is greater than the exports. The Quebec Chamber this year passed an act giving $12 to any one planting and keeping one acre in trees, and an act forbidding the clearing of land by fire between July 1 and September 1. Government, when putting revenue from forests down as income, has been killing the goose that lays the golden eggs. Everyone can help in replacing the trees that are being cut down. From 100 square feet sown with ash you can plant out 100 acres of ash trees and have a return in three years. Emigrants to Manitoba should take boxes of tree seeds with them; a plantation would break the winds as well as supply his much needed timber.

BREAKING UP OF THE EASTERN TOWNSHIPS FOREST.

The Rev. W. Fyles read a paper of "How the forest of the Eastern Townships was broken up." The hilly district between the Seignories and Lake Memphremagog was one of vast forest, broken here and there by lakes and beaver meadows. The elms first disappeared, as the early settlers found them best for pot and pearl ash, the pines followed, only the best being used and the remainder being destroyed. White ash, brown ash and basswood were utilized for fences. The sugar maples were often tapped so violently as to make them an easy prey to insects. Splendid bass was split into sap troughs. When the Waterloo Railway was opened the hemlocks began to be stripped of their bark, and left to rot. The winds, too, wrought havoc on the forests at the edges of the clearings, and fire has damaged them ten times more. Then there were the insects which attacked the trees. The *Buprestes* and the *Monohammus Titillator* devour pine lumber, and the black and yellow beetle *Clylus speciosus* attacks the hard maple. The decay of trees is still more accompanied by the *Tremer Columba*, a horntail, which inserts its eggs through the bark. Horntails and other borers only attack unhealthy trees—struck by lightning, broken by wind, burnt or abused by man. Felled hemlocks, if not soon taken away, are eaten by the "one-colored sawyer." The poplar is eaten by the *Cossus Centerensis*; half-digested sawdust appears on the mouth of its borings. Mr. Fyles suggested the help of newspapers and school teachers in spreading information; farmers should thin their bush, should prune little and only in winter, and should tap maples very carefully.

PUBLIC MEETING IN THE QUEEN'S HALL—THE HON. MR. JOLY ON CANADIAN FORESTRY.

A large, intelligent and attentive meeting of citizens gathered in the evening to welcome to Montreal the distinguished gentlemen from abroad who are attending the Forestry Congress, and to listen to the speeches. The platform was tastefully decorated with flowers, and the British and American flags intertwined, while the famous line, "Woodman, spare the tree!" was conspicuously shown on canvass suspended in front of the organ. The band of the 65th Rifles entered the hall shortly before eight o'clock, and rendered a couple of inspiring *morceaux* preliminary to the opening.

On the platform were His Honor Mayor Beaudry, who took the chair, Hon. Mr. Joly, Joseph Doutre, Q.C., Wm. Little, Esq., Dr. J. A. Warder, Vice President of the Congress, Dr. Howard, late of the Longue Pointe Asylum, J. R. Dougall, Esq., S. E. Dawson, Esq., T. C. Keefer, C.E., W. Munderloh, Esq., German Consul, —— Drummond, Esq., Dr. Macdonald, &c., &c.

The CHAIRMAN, in opening the meeting, tendered the welcome of the citizens of Montreal to the gentlemen visiting the city to attend the Congress.

Mr. W. LITTLE announced that the Hon. Mr. Loring, President of the Congress, was expected to be present this evening, but was unable to do so. However, we had a gentleman present, a resident of our own province, abundantly able to fill any position—the Hon. Mr. Joly, whom he would now invite to address the meeting.

The Hon. Mr. JOLY, who was received with loud applause, extended a welcome to our visitors, not only on behalf of the citizens of Montreal, but also of those of the old city of Quebec and of the province generally. The provinces of Ontario and Quebec had both commissioned delegates to this Congress, and these would hereafter be heard in the Congress. The general subject of forestry might seem one very well known to the people of the Province of Quebec. He was particularly glad to see so charming a gathering of ladies present, which afforded ample evidence that the question was one of great interest, and not so prosaic as generally supposed, and he would endeavor to treat it in a manner worthy of his fair auditors. Here in Quebec we were accustomed to think we had an inexhaustible supply of timber. We may have had at one time but we could scarcely say that now. There was one gentleman—Mr. Little—to whom this country owed much for stirring up a public opinion in favor of preserving our forests. This Congress must be a satisfactory evidence to him that his labors had not been in vain. He (Mr. Joly) found in the letters of the old French governors of 1690 references to the value of our forests in almost the same words as those used by Mr. Little fifteen years ago. It might be asked, Where do all these great rafts of lumber come from that we see floating down the St. Lawrence to the sea? They come from regions several hundred miles above Ottawa, from the water sheds dividing the valley of the St. Lawrence from that of Hudson's Bay. The immense regions lying between the Ottawa and the St. Maurice were already becoming exhausted, and the same could be said of the valley of the Saguenay. Along with Mr. Little he ought to have mentioned the name of Mr. Levêque Dailleboat, who, ten years ago, first took practical steps toward the formation of forestry associations. These two gentlemen deserved well of their country, and would yet be regarded with the esteem they deserved. It was quite true that Canada had not reached the condition of older countries, but we were rapidly nearing it. What was the cause of the great floods and rushing hurricanes which prevailed in the western States and the older countries of Europe? It was the absence of forests. In France a century ago immense tracts of sterile, sandy plains had been reclaimed to fertility—a great usefulness by means of the planting of trees. There was, no doubt, a difference of opinion as to whether it were more necessary to plant new forests or conserve those already existing. There were two great enemies of the forests which we had to combat—fires and the lumbermen. The means of combating these enemies would be fully discussed in the meeting of the Congress. He might mention his own experience. He had control of about one hundred thousand acres of forests, and he made it a rule not to allow any tree to be cut under one foot in diameter, and he found that not only did the forest afford all the timber required, but its supply was constantly kept up and could be indefinitely. In regard to the rapidity of growth of trees, he was in a position to prove that black walnut grew about three times as fast as pine, and five times as fast as the ash. He had eight years' experience with the culture of black walnut, and that was most satisfactory. European authorities had stated that one acre could support 680 trees at the age of sixty years. But he would suppose that only four hundred trees could be supported on one acre, and this number would prove a source of very great profit. He had himself found during the last eight years that black walnut grew at the rate of half an inch a year. On the shores of Lake Simcoe, where the soil was exceedingly rich, they increased nearly an inch in size per year. But, suppose they increased only at the rate of half an inch, this would give a tree twenty inches thick in forty years. At the present price of one dollar per cubic foot, one acre of four hundred trees would represent a value of ten thousand dollars. Black walnut was not only the easiest tree to cultivate, but it grew the most rapidly. According to Prof. Maccun's report, our Western prairies were once covered with a thick growth of timber; why should not these prairies be covered again, at least partially, with forests? It had been said that the life of individuals was so short that the planting of forests should be undertaken by Governments. But he could tell them that if an individual's life was short, that of Governments in general was still shorter. (Laughter). Let each man do his own duty, and plant for posterity. In some of the States very liberal premiums were given to encourage the planting of trees, and he thought the Government of Quebec might well take similar action. At the last session of the Legislature he introduced a measure looking to the establishment of an "Arbor Day," like that existing in the United States. In this respect we might well follow the example of our practical neighbors. Even in the State of Michigan the Governor issued a proclamation establishing an "Arbor Day," although that State produced more lumber than the whole Dominion. This subject of forestry was a hobby with him. (Mr. Joly) and he could assure his audience that it was one which no one could take up without becoming enthusiastic over it. If it was an evidence of faith in Divine Providence for the farmer to sow his seed in the spring time in the confidence of reaping the harvest in the course of a few months, how much greater evidence of faith was it to plant young trees for which half a century or a century were required to bring them to maturity? (Applause.)

Prof. F. B. HOUGH, Chief of the Forestry Division of the Department of Agriculture, Washington, then read a long and exhaustive paper on the duty of governments in relation to forestry. The importance, from a climatic, sanitary and agricultural point of view, of the conservations of our forests, he urged with force and at great length. While presenting encouragements for individual effort, he thought the nature of the work peculiarly called for the action of government. He advocated the establishment by government of a system of experimental plantations for the training of young men in forestry, and gave a description of those in existence in Germany and other European countries. In our own country, where agricultural colleges were numerous, he believed the most feasible plan was to get the officers of those institutions to co-operate in the adapting of forestry upon experimental plantations. He heartily approved of the government regulations controlling the cutting of the forests in the Province of Quebec, and believed that with some modifications they could not be excelled and would ultimately be adopted by all the state governments. The regulation which prohibited the cutting of pines of less than twelve inches in diameter, was a very good one, but still he would like to see the minimum raised to sixteen inches, as when the tree reached twelve inches it was in the period of its most rapid growth and a great waste resulted from cutting it then.

Mr. D. W. BEADLE, of St. Catharines, Ont., a delegate from the Ontario Government, it being then after ten o'clock, moved the adjournment of the meeting in some humorous remarks. He hoped to have another opportunity of addressing the citizens on the subject of forestry.

While the audience was dispersing the band of the 65th gave another selection.

SECOND DAY.

A LARGE ATTENDANCE—THE CONSOLIDATION DISCUSSED.

The attendance at the opening of the second day's congress was considerably larger than yesterday, a number of friends of the Convention having arrived last night and this morning. A number of ladies were present, and the proceedings, although of a routine character, were of much interest. The congress assembled in the principal hall at ten o'clock.

The Hon. Mr. JOLY, vice-president, in the absence of the president, occupied the chair. The chairman explained that they had assembled in general meeting prior to proceeding with the reading of papers in the section rooms for the purpose of considering details and consolidating the work of the several committees. The amalgamation of the American Forestry Association with the American Forestry Congress, or rather the reception of the former into the latter was discussed the previous day and a committee was appointed to report upon it. He called the Secretary of the Committee to read the report.

Mr. Saunders, the Secretary, read the report, which recommended the union of the two bodies, which was adopted.

On motion a committee of five was appointed to revise the Constitution of the Congress and report at to-morrow morning's session.

The Chairman announced the arrival of the President, the Hon. Mr. Loring.

The question of establishing a Forestry journal and other subjects of interest were then considered. The Chairman said it was proposed to publish a journal of forestry, and a strong publishing house in Cincinnati, Robert Clarke & Co., had offered to undertake it. But they required one hundred more members, and the agent of the house was present to take subscriptions. Another matter that should be discussed here was the necessity of Government devoting some of its revenue to the promotion of the interest of forestry. The President here assumed the chair.

Mr. J. K. WARD then read a paper to show the importance of preserving our forests. He stated that at present the production of lumber in Canada amounted to 2,000 million feet per annum, and 12 million saw logs eighteen inches by twelve. Nine-tenths of this lumber is exported, giving a return of some $25,000,000. To produce the above quantity of lumber it requires a million acres of land to be gone over. There can be no question as to the necessity of taking means to make the best use of our standing timber, and in utilizing it—first, in greater economy in manufacturing it, both in the mill and in the woods, discouraging as much as possible the making of square timber. (Applause.) Second, on government land the laws now applied to pine should extend to spruce and tamarac, that is, that nothing less than twelve inches at the stump should be cut down. Third, fires should be more carefully watched and prevented. In his thirty years' experience he had come to the conclusion that most of the forest fires were due to the fishermen and hunters. In view of this he would suggest that Government employ as many men as necessary in each agency to look after and trace the origin of fires, and bring the offenders to justice. The quantity of land under license in the Province of Quebec to day was 40,000 square miles. In the other provinces there was about the same extent. The quantity of timber land now in Canada was something like fifty million acres of land, and at the present rate of production this quantity of timber would last for about fifty years to come. It was beginning to be said now in Canada that cotton was king, but a glance at the present proportion of the lumber industry would show that lumber was king in Canada.

The President, a gentleman of fine presence and evident great ability, then addressed the Congress on the general question of forestry. This was peculiarly an American interest and the United States and Canada could co-operate in conserving and extending our forests. We were doubtless greatly indebted to the scientists who had first called attention to the easiness of tree planting and tree preservation. All thanks to those who told us where the pine and the walnut would best grow, where we could most profitably plant the maple, the birch and the willow, and where the eucalyptus and the catalpa would best grow and do the most good. He eulogized the paper of Mr. Ward and expressed his astonishment at the timber wealth of Canada. Alongside of wheat and cotton and cattle there stood the forests of this country, holding a mine of wealth superior to that of any other article of produce. The trouble had been hitherto that every man felt he had undisputed right to go on government lands to do what he pleased with the lumber thereon. We must bring the public forest lands under the supervision of law as closely as are the farms of individual. The invasion of timber lands should be punished as rigorously as the trespass upon private property. The lumber industry in the United States amounted to $233,000,000 a year. The number of persons employed in it was 141,000, a whole community. The amount of money paid them in wages was nearly $36,000,000 a year. Was he wrong, then, in claiming that the foundation of this industry should be as sacredly protected by law as the cotton, the boot and shoe, or any other industry? The question had passed out of the spheres of individual interest, or of ornamentation and had become now emphatically one of national importance. We must protect the forests from the settlers themselves, who look with profound contempt upon a pine tree four feet thick, but who regard a stalk of wheat a sixteenth of an inch thick with the greatest respect. (Laughter.) Let the Government declare that all forest lands unfit for cultivation shall remain the property of the Government, who shall derive only such a revenue from it as shall not exhaust it. Then with regard to fires, settlers should be closely watched and taught care in setting fire to their brush heaps or dead grass. The people should by every possible means be made to understand the value of the forests. Let the farmer learn that wild land over which a fire has passed has half its fertility destroyed. Nature would do her share of the work if we would give her an opportunity. He had seen abandoned farms in the Eastern States which were growing up pine trees, and these would render them even more valuable than they were before. From the official reports of the department at Washington he found that in Georgia there remained standing 16,778 million feet of pine lumber, which, at the rate they were now cutting it, would last seventy-five years. In Florida, 6,615 million feet, which would last, at the rate it was cut last year, only thirty years. All this time Nature was busy. Let her alone and in about thirty years she will have a tree for you. In Alabama the quantity of pine timber standing was 18,800 million feet, which, at the rate it was cut last year, would last seventy years. In Mississippi 17,200 million feet, lasting 150 years; Minnesota, 6,100 million feet, lasting ten years; Michigan, 29,000 million feet, lasting seven years; Wisconsin, 41,000 million feet, lasting twenty years; Louisiana, 48,000 million feet, lasting five hundred and forty years; Pennsylvania, 1,800 million feet, lasting five years, and 4,500 million feet of hemlock, lasting fifteen years; Arkansas, 41,325 million feet, lasting three hundred and twenty years; California, 25,325 million feet, lasting one hundred years; South Carolina, 3,316 million feet, lasting twenty-seven years; Maine, 5,000 million feet of pine and spruce, lasting sixteen years. New Hampshire does not return a pine tree of any kind, and its spruce will all be gone in ten years at the present rate of cutting. Hence it was evident that in about one generation the supply of pine lumber in the United States would be almost completely exhausted unless means were taken to lessen the present frightful waste.

REPORT ON FOREST FIRES.

Dr. CHAS. MOHR read the report of committee of the last meeting of the congress upon the injuries caused by forest fires. The report enumerated the causes of forest fires, among which was mentioned the practice of circling trees in order to secure the gum that exudes from the wound, for purposes of commerce. Another cause of injury to forests is the partial burning over of timber land by fires, which, though it may not kill the trees, almost entirely arrests their growth. Moreover, these frequent fires finally result in the total destruction of the organic matter in the soil. The pasturing of cattle in the woods, a custom very common in the country, is also a cause of gradual but sure destruction to the forests on account of the cattle browsing the leaves off all the young and growing trees, so that when the old trees die out there are no saplings to take their places.

The report was on motion received, and the President called for remarks on the general subject of forest fires.

Mr. P. WHITE, M.P., Renfrew, Ont., said that there was a difference in the regulations respecting timber lands in the United States and Canada. In the United States timber lands become the exclusive property of the occupant, whilst in Canada the Government retained the ownership, and only leased the use for a term of years. He was convinced that in the Upper Ottawa district as much timber had been consumed by fire as had been cut down and carried away, to the value of at least twenty millions a year in each case. Not only were those fires caused by sportsmen, fishermen, and hunters, but also by the settlers in clearing their lands, and even by the criminal carelessness of the employees of the lumbermen themselves. He would suggest that the Provincial Governments should intervene. In Ontario settlers were not permitted to burn their brush from April to November, while in Quebec the restriction only applied to the months of July and August. This restriction should be extended at least to the months of June and September. The authorities should take the precaution of dividing the timber lands into convenient districts and place them under the supervision of agents, who should visit every settler and acquaint him with the penalties that the Government should hereafter visit upon the careless setting of fires. There was very little malicious setting of fires; it was, in nine cases out of ten, the result of carelessness. In the Ottawa section the lumbermen had endeavored to co-operate in preventing fires, but their experience showed that only Government authority would suffice. The lumbermen themselves would not object to a special tax to meet the expenses of close governmental supervision.

Mr. WRIGHT, of Massachusetts, whose remarks were mostly inaudible, related his experience with a forest fire in the west. The fires started through the carelessness of the settlers did infinitely more damage than the Indian fires.

The Hon. GEORGE BRYSON heartily concurred in Mr. White's suggestions as to the means of preventing forest fires. The months of May, June, September and October were those during which nearly all the destructive fires took place on the Ottawa. Some twenty-five years ago he was examined before a committee of the House of Commons, when he stated that for every tree that was cut ten were destroyed by fire. That proportion did not continue now, but his opinion was that for a great many years ten times as much timber was destroyed by fire as was cut and used.

Mr. JOHN DOUGALL, New York, said the month of May was the worst month in the year for forest fires, owing to the fact that at that time the ground was covered with dead leaves and grass, as dry as tinder, which took fire from a spark. Hence that month should be included in the time during which settlers should be forbidden to burn brush.

Mr. THISTLE advocated Government supervision of the forests in order to prevent devastating fires. The immense regions beyond the

Ottawa, forming the water shed toward Hudson's Bay, were once covered with valuable forests which had been almost completely destroyed by fire.

Mr. MARTIN, Cayuga, said he knew that in Michigan and in the Ontario Muskoka region, many fires were started by lumbermen's laborers with the malicious purpose of securing labor for themselves when employment was scarce. Scarcely any punishment could be too severe for such persons.

Mr. J. K. WARD said if the authorities took half the pains to prosecute malicious forest incendiaries that they did to punish a poor wretch who stole a dollar's worth of goods, it would have a beneficial deterrent effect.

The CHAIRMAN, there being no more speakers on the subject, thanked the Congress for the practical statements and suggestions which had been put forth. He especially wished to emphasize a suggestion that a man who would set fire to the woods but not to a barn, should be taught that one crime was as great as the other.

Hon. Mr. JOLY moved that it is the duty of this Congress to draw earnestly the attention of the Government to the necessity of protecting effectually the public forests against fires. He proposed that a memorial should be sent to the Governments of the United States and Canada.

Motion carried.

Mr. FERNOW moved that the papers remaining unread be submitted to a committee consisting of Prof. Hough, Dr. Warder and Mr. Beadle, who shall select those they deem most important to be read before the general meeting of Congress this afternoon.

Motion carried.

The following gentlemen were elected a committee to memorialize the Governments of the United States and Canada on the necessity of protecting public forests: Messrs. Peter White, M.P., J. K. Ward, Dr. Mohr, Hon. George Bryson Prof. Hough, and P. E. Fernow.

The Congress then adjourned until two o'clock.

AFTERNOON SESSION.

The Congress re-assembled at half-past two o'clock, the President in the chair.

The following papers were read by title:—"Experimental plantation of the Eucalyptus, near Rome," Prof. Hough; "Conditions of Forest Growth," B. E. Fernow; "Lessons to be learned from the Forests of Western Asia," Prof. M. S. Osborn; "Borers in Forest Trees," Rev. T. W. Fyles, Cowansville, Que.

ON THE GROWTH OF THE BLACK WALNUT TIMBER IN ONTARIO.

Prof. HOUGH read a paper on this subject, contributed by Mr. Thomas Beall, Lindsay, Ont. The author remarks that at the present rate of disappearance the public forest domain of Canada will be entirely gone by the end of the present century. The black walnut has already disappeared, and most of the pine and tamarac. To persons seeking a permanent investment for surplus capital, forest tree planting can be prosecuted with a greater probability of financial success than attends almost any other round commercial enterprise, while the cultivation of the black walnut offers greater pecuniary profit than ony other tree. Experience has taught that it can be grown with success in Canada. The rapidity of its growth equals that of any other tree in this country, while its timber exceeds in value that of any other.

HOW FARMERS MAY GROW FOREST TREES FROM SEEDS.

Mr. G. W. Beadle, St. Catharines, Ont., contributed an essay on this subject. The important thing was to plant the seeds in well pulverized soil as soon as they are ripe. A gentleman of Montreal has placed upon the table a maple seedling eight inches high, the seed of which was sown only two months ago. In order to preserve the seeds they must be mixed with damp sand or earth, when they may be kept till the next season. The seeds of the sugar maple ripen late in the autumn and will have to be kept over. Oaks, butternuts, chestnuts and walnuts also ripen late, and must be kept over. These larger seeds must be planted two or three inches deep.

A gentleman asked if the seeds would not germinate if kept in damp sand. Mr. Beadle replied that seeds ripening late in the Autumn should be mixed with sand slightly moist, which might bear the word damp; they would not germinate before spring.

The PRESIDENT suggested that nuts should be planted in the fall, and they would have already sprouted by the arrival of spring.

The paper, "Timber Trees of the Black Hills," Robert Douglass, Waukegan, Ill., was read by title, as also was the paper, "Oaks of Hardin County, O.," W. F. English, Mount Victory, O.

Dr. JOHN A. WARDER made some remarks on the timber of the Black Hills.

The paper, "The Coniferous Trees of the United States and Canada," Dr. George Vasey, Washington, was read by title.

A PLANTATION ON DRIFTING SANDS.

Dr. J. A. WARDER verbally gave the contents of a paper on this subject. The larch is a tree which may be cultivated on sand that will produce nothing else. In an experiment of this nature the white pine was first planted, which spread out to a circumference of three or four rods on the ground, and only three feet high. The experimenter found that as soon as the ground was thoroughly sheltered by the pine would shoot up in a splendid spire at the rate of four or five feet per year. He took a lesson from the pine in managing his larches.

THE ASH.

Mr. ARTHUR BRYANT, of Princeton, Illinois, read a paper on this subject. He said that of the six species east of the Rocky Mountains, the white ash is the most useful for all purposes where strength, lightness and elasticity are required, as notably in the manufacture of agricultural implements. Where this tree grows rapidly, as in favorable soil and climate, it affords the best timber, but where it is stunted in growth, as in Southern Russia, it is of a weak and brittle texture. In planting the ash with a view to the production of timber, the trees should be grown thickly while young, in order that they may take a clean, straight stem. When of proper size the trees may be taken from the seed bed and planted in rows four feet apart and two feet apart in the rows. They may be easily transplanted, after which they should be kept well pruned of side branches up to near the top. From three to four hundred trees are probably as many as can be grown to maturity upon an acre. The blue ash is rarely found east of the Alleghanies. It sometimes reaches the height of seventy feet or more, and is distinguished from other species by the quadrangular shape of the young shoots. The bark on old trees is not furrowed like that of the white ash. The black ash is usually found in wetter soils than the other species, whence it is often called swamp ash, or water ash. The wood is very elastic and divides easily into thin strips, which are used for coarse basket work and for the hoops of barrels, for which latter purpose it is the most economical wood that can be procured. The red ash is common in Pennsylvania and Virginia, and possesses similar qualities to the white ash. The green ash is a small tree, seldom reaching middle size. It is found on the banks of rivers and is more common in the Western than in the Eastern States. The properties of the wood are similar to those of the white ash. There is another variety called the Carolina water ash, found in the swamps of the Southern States, which has no very special merits.

After Mr. Thompson's paper on Extensive Planting by Shelter Belts in Dakota had been read by Dr. Warden, Dr. Hough read the next paper:

ROADSIDE TREE PLANTING.

This paper was sent by Mr. W. A. Hale, of Sherbrooke. Roadside tree planting, even encouraging the present growth, is not waste of time or money, but increases the chance of selling the farms. One man, a blacksmith, fifteen years ago planted 200 white willows on a sandy part of his farm, and now he has found an eager purchaser for the once uninteresting spot. It is suggested that Mayors be made honorary members of the Congress, and that they instruct the road inspectors to care for the roadside trees. The official air thus given to the proceedings would impress the people far more than any number of treatises. Directors of agricultural societies also should bring the matter of forestry up at farmers' club meetings. As to the kind of tree, whatever sort is found should be left—except the poplar or aspen and the wild red cherry; the former would be destroyed by borers and the latter by boys. The elm grows faster and is more healthy than the maple. Basswood, butternut, brown ash and white willow are all good; beech is useful but not healthy. The double spruce (*abies nigra*) is more hardy and handsome than the red spruce. Tamarac, cedar (so-called) and balsam are desirable, but many of the latter were killed last season. If no trouble in choosing is wished, then take the white willow. It is the first to show leaves and to feed the bees in spring, and the last to lose its leaves. All the fine white willows of the Lennoxville district came from a riding switch stuck in the ground by a traveller from Vermont many years ago. The paper concludes with the sage advice of a Lowlander, "Be aye stickin' in a stake, Jock."

PLANTING BY SHELTER BELTS.

The paper read by Dr. Warder of North Brud, and communicated by H. M. Thompson, Dakota, spoke of the extensive sandy deserts west of the Mississippi, sufficient to make three millions eight hundred thousand farms of two hundred acres each. The great desideratum is to reclaim these deserts, which may be done by extensive planting of forests. The extent of forest, to be effective, must be planted so as to shelter the earth from the sun, the drifting sands and the winds, and to modify the climatic changes in such manner as to prevent, or lessen the force of, hurricanes and tornadoes. This could be done by the planting of belts of forest trees judiciously located. They may be planted in rows from eight to ten rods apart, or on all sides of small sections of land. For this purpose walnut, hickory, cottonwood, buttonwoods, and the larches are most suitable. Evergreens have never flourished under such circumstances. It is believed that such shelter belts will retard the increase of noxious insects, favor the increase of insectivorous birds, and promote an equable and moist climate which will render those at present useless regions fit for the habitation of man.

LEGISLATION ON FORESTS.

Mr. J. A. U. Beaudry, of Beauharnois, read a paper on this subject, which recapitulated the legislation relating to timber lands in this province. He advocated governmental encouragement to roadside planting of trees, and further legislation with a view to better prevent forest fires.

Mr. H. LYMAN, Montreal, expressed his gratification with the paper just read, and his thankfulness to the members of the congress for drawing public attention to this important question.

Mr. MARTIN said that in Ontario the law gave railway companies power to cut down the trees for a distance of four rods on each side of the railway, a right which they had sometimes exercised in the destruction of shade trees cultivated at some expense by individuals.

A gentleman stated that in the State of New York the planting of shade trees along the roadside exempted the proprietor of the land from paying the road tax.

FORESTRY FOR HEALTH.

Dr. Henry Howard, Montreal, read a paper on "Forestry from a Hygienic standpoint." He took exception to a statement of the President, that Forestry had now reached a point where it could dispense with the aid of science. If it did it would very soon fall through. He had heard some very unscientific statements in this Congress: for instance, that there was spontaneous generation of trees. That was nonsense. Wherever there was a tree there must have been a seed, wherever it came from. Coming to the subject of the paper he traced the points of resemblance between the growth of the tree and that of man. From the skin the animal receives its sensation and nervous system; the same is the case with the tree. Both have a breathing, a circulatory and a recuperative system. Both, to be normal and healthy, must be sustained with nutritious food. In planting trees keep in mind how much a young tree resembles a little child; give it genial and suitable soil. Seed sowing was more in accordance with natural law than the transplanting of saplings, and trees grown from untransplanted seeds are more likely to thrive, as the process of removal is rarely unattended with injury. Clearly nature indicates that the seedling should be left where the seed had germinated.

The PRESIDENT replied to the strictures of Dr. Howard on his own statement as to the relations of science and forestry. Dr. Howard's paper reminded him of Falstaff's complaint, that there was an intolerable deal of sack to so little bread. There was very little hygienic forestry in Dr. Howard's paper, but a great deal of theory. He (Mr. Loring) protested with all his force against man being brought down to the level of the vegetable or animal kingdom. He protested, as an immortal and spiritual being, against being classed with horses and oxen. Years ago he made a similar protest in the presence of the celebrated Agassiz, and that illustrious scientist heartily commended him for it. It was a lucky thing for a pine tree that it had not mind enough to know when a man approached with an axe to hew it down. If it had, it would tremble as much as Guiteau did the night before he was hanged. On finishing his remarks, the President left the room, although Dr. Howard had already risen to reply.

Mr. JOLY took the chair, and said that Dr. Howard was entitled to make some explanations, and it was to be regretted Mr. Loring was not present to hear them.

Dr. HOWARD disclaimed earnestly any intention to reflect upon Mr. Loring's remarks, but he thought he was quite within his province as a member in expressing his dissent from Mr. Loring's statement made in the morning that science and ethics had done their part, and it was now for the society to take up the question and deal with it practically.

Mr. WRIGHT, Massachusetts, said he thought, while the President was speaking this morning, that he was using language which was liable to be misunderstood.

Mr. WILSON, Boston, asked for the particulars of the case mentioned by Dr. Howard in his paper, that the planting of trees had drained a swamp.

Mr. MARLER said the case occurred in Granby, Eastern Townships, where part of a blueberry swamp had been drained.

Prof. HOUGH remarked that the cultivation of the Eucalyptus, near Rome, had drained marshy land to a depth of five or six feet.

Mr. LYMAN spoke of the difficulty of growing spruce trees in Montreal and vicinity.

Mr. WM. SAUNDERS, London, Ont., read a paper "On the growth of poplar trees for the manufacture of paper and charcoal."

Mr. BERNARD FERNOW corroborated the statement of Mr. Saunders as to the value of poplar for making charcoal. On account of the extent to which the poplar exhausts the ground it would not be wise to plant it in groves, but it should be mingled with other trees.

Mr. SAUNDERS was well aware that poplars ought not to be planted in groves, nor did he say so in his paper.

Mr MARLER said the black willow afforded the best charcoal for manufacturing purposes.

"What to plant for Forest Trees, for Groves and for Wind-breaks," was the title of a paper contributed by Suel Foster, Muscatine, Iowa, which was read by the Secretary.

Mr. B. E. Furnow read a very long paper entitled, "Conditions of Forest Growth."

Mr. Saunders, Prof. Hough and Dr. Mohr spoke in high terms of the value of the paper.

Prof. Hough, Secretary, then made some announcements, and after conversation as to the proper time of holding the annual meeting, the Congress adjourned till this morning at nine o'clock.

A number of very interesting papers which were contributed to the proceedings of the Congress were only read by title, owing to the want of time. Below, however, we are enabled to give abstracts of the contents of some of these papers.

PROFITABLE FOREST TREE CULTURE.

Mr. C. E. Thorne, Springfield, Ohio, then read paper on this subject. The object of this Congress, he said, is to convince the American farmer that forest tree culture may be made financially profitable, not only to his grandchildren, nor even to his children, but to himself. The removal of the forest has ill effects upon the soil and climate, and there will be a coming scarcity of timber for fuel, building and other industrial purposes. Already other materials are replacing wood; ships, houses, bridges and fences are now largely constructed of iron and clay. Even the straw of a summer's growth is entering into manufactures in forms where once was used only the century growing tree. On the other hand, hundreds of thousands of acres in the older states have been allowed to grow up into forests in consequence of the exhaustion of the soil by improvident cultivation; while the western emigrant, in loving remembrance of the woods of his eastern home, has planted a portion of his prairie farm with trees, so that the actual amount of woodland in the prairie states is far greater than it was half a century ago. Notwithstanding these isolated facts the rapid diminution of the forests on this continent is an alarming fact and calls for a remedy. In the case of the black walnut, men who once split logs of this wood into fence rails, or rolled it into the fire, have lived to see it worth one hundred dollars per thousand feet standing. No other tree, however, is raised more easily or grows more rapidly. There is also a great demand for a wood which can stand climatic changes, as for fence posts and railway ties, and this wood is found in the *catalpa speciosa*, which is also one of the easiest and most rapid growing trees. The culture of these trees can be made more profitable than that of any other crop usually grown by farmers, in proportion to the labor required. Cottonwood, willows and locusts can be made profitable in eight or nine seasons, when the poles of these woods would have a diameter of from two to four inches, and a height of from fifteen to twenty feet, suitable for bean or hop poles. If peeled they would serve as fencing strips and would be found quite as durable as pine boards. Between the tenth and twelfth years the catalpas should yield two fence posts each; between the fifteenth and eighteenth year each tree should yield seven posts, and between the twentieth and twenty-fifth year twelve posts each. Upon one acre of land planted with the above species of trees, it is an easy matter to derive a net profit of $750 during the first twenty-five years. Black walnuts of fifty years growth should have an average diameter, four feet from the ground, of sixteen inches, which would afford a yield to the tree, of 250 feet of lumber, or worth, at present prices, $1,000 per acre in the log. Mr. H. C. Raymond, of Council Bluffs, Iowa, states that in ten years' time black walnuts had attained a diameter of five inches and a height of twenty feet, and catalpas a diameter of six inches and a height of twenty-five feet. Prof. W. J. Beal stated at the Cincinnati meeting of the Forestry Congress that catalpas had attained a diameter of from sixteen to twenty-four inches in thirty-two years' growth, and black walnuts of five years' growth were fifteen feet high and seven to eight inches in diameter. On a tract of land in Missouri, from which settlement had stopped the ravages of fire in 1857, black walnuts grew, in 1871, to be large enough for railway ties, and ten years later were twelve to sixteen inches in diameter.

CANADA'S FUTURE AS A STEEL PRODUCER.

This was the title of a paper sent in by Mr. Edward Haycock, president of the Ottawa Iron and Steel Manufacturing Company. In speaking of the future of Canada, with reference to her wooded lands, he found it necessary to bring forward two principal factors in that future, intimately connected with each other, viz: wood for charcoal making and iron ores. In the manufacture of high grade iron the charcoal fuel will be used, in fact, so far as our present knowledge of such manufacture goes, cannot be dispensed with. The present has been well-termed the "steel age." A very large proportion of articles formerly made from incarbonized iron are now made of steel. Still the employment of steel is probably only in its infancy. If in the manufacture of steel for the future wood charcoal is a necessity, where is it to be found and what steps are to be taken to protect the supply from destruction? He ventured to assert that Canada would be the future field from which the largest part of the world will have to draw their supply of steel and steel making irons. The Dominion had been called a wooden country, and Canadians were proud to accept the term, for they were prepared to show that our forests, extending throughout the country's vast extent, were intimately connected through the Laurentian rocks with the richest and purest class of iron ores. Among others take the valley of the Grand Ottawa River and those of its tributaries, the forests might be counted in square miles by hundreds of thousands. Much of this was pine held by lumbering firms, who in their large undertakings were adding to the wealth of the country. The wealth to be acquired in the future in connection with the iron ores would fully equal this if not exceed it. In connection with these lumber lands, and in vast independent tracts, are forests of the finest maple, beech, birch and other hardwoods of the greatest value to the Dominion for the production of charcoal, and if, as is the case in many portions, iron ore is found on the same lands, it is easily understood how valuable they become. The cut from these lands will range from 20 to 80 cords of wood to the acre, say an average of 50 cords, making 40 bushels of coal to the cord; thus four cords of wood will make one ton of iron, or 12 tons to the acre, showing its value and importance to the country. If proper care be given the supply of wood for fuel is practically inexaustible and fully establishes the fact of a great future. Wood charcoal to become valuable must be within a reasonable distance from the ore it is required to smelt. He then instituted a comparison between Canada and other countries, Spain, Algeria and the Mediterranean islands, with their rich ores had no wood, England ditto, and Norway nearly so. Sweden where the present great steel producing iron is made is rapidly approaching the same position. Germany and France, also the United States with their vast consumptions and rapid increase of charcoal blast furnaces would hardly be able to keep up their supply many years. Russia's freights and internal dissentions killed the possibility of a supply being drawn from her. Where then could the age derive its steel from, unless from Canada with her extensive woodlands and rich ore beds? He did not allude to the waste in sawmills, and in clearing up new lands, but this was a point that should be improved? on while considering charcoal making. The legislature should adopt measures that would prevent waste. He concluded by a few friendly words to those who had come from across the lines.

WHAT INDIVIDUALS CAN DO.

Dr. Reginald A. King, of Compton, P.Q., contributed a paper on "Individual effort in preserving and propagating our trees." Governments should make efforts in this direction, but so should farmers. Some suggestions may be made to the farmer who has some land cleared and does not look on every tree as an enemy. Visiting his wood before leaf-fall, he should calculate how much house-warming wood he can get from fallen wood, and mark dead or dying trees for his axe in winter. A tree with its upper and central branches dead, or losing its large branches, is dying: if cut then, it may be used for manufacturing. Great care should be taken not to injure a young and promising tree, or to cut it because it is handy. Any gaps should be planted with young trees. Roadways should not be made straight if young timber would have to be cut. The lower branches of large and healthy trees may be cut off for firewood. As to propagation—we are not yet reduced to seed sowing. Planting should be done at the proper time and in proper soil. The tree chosen should be not too large but of thrifty foliage, with trunk unwounded; the rootlets should be carefully preserved, and its new soil should be like that from which it came. Trees should not be taken up till places are ready to receive them. It should be made quite certain that the frost is out of the ground before transplanting, and the soil should be broken up the previous fall. As to what to plant, and where—the maple, elm, cedar and spruce are most profitable in this Province; but brown and white ash, white birch, basswood and lignum vitæ may be added. Butternut and white cherry grow rapidly and are valuable; in some places white pine grows large enough to be valuable. The farmer should look for spots about his grounds and roads where he could plant trees. In broken shaly spots in the fields he can plant the rock maple, while nothing else will grow profitably. They should be cared for at first. In some undrained patch he may grow cedar and ash; on some high bluff butternuts and cherry will grow. Maples should be tastefully arranged, not too close to the buildings. On the north-east and north-west of the orchard, maple, elm and pine are a protection. Elm and maple should be planted along the roads. Three days or a week in the year given to this work will not be unprofitable.

THE MILLS OF WEST FORK.

Mr. J. Jenkins, of Winona, wrote a paper on this subject. He said he had been advised to give the location of West Fork for the benefit of travellers from eastern lands, but this he particularly objected to do, lest he might be asked many other questions. He finally said that West Fork flowed into Beaver, and Beaver into Ohio River, and Ohio into Mississippi. After a graphic description of the stream winding through the meadows, he proceeded to speak of the changes that had taken place, and to consider what had been lost and gained by the wholesale destruction of the woods. They had gained to agriculture for pasturage and cultivation a large area of fertile land in the emptied basins of the old reservoirs and milldams; they had gained in the aggregate productions of the region, and in population by extending cleared land. On the other hand, they had subjected themselves to cloud bursts on the naked hills which once drank in the descending floods, in the porous woodland soil, but now the solid compact hill sides threw off the floods into the valley at times an irresistible torrent carrying destruction and death in its course. They had lost in untold millions of feet of lumber sold at prices very much below the present rates, with a vast amount of wood recklessly destroyed, and when considering the fact that as a result of the interference with the restorative operations of nature, they had stamped out all prospect of the renewal of the forest growth by close pasturing and continuous ploughing, it was indeed a question whether they had not lost instead of gained by the change. Not that he would reclothe all the land in woods again were it in his power, but by judicious replanting of the waste lands where the wood has been destroyed, the steep and rocky hillsides and ravines that possess but little value for agriculture, they might establish a happy equilibrium, preserve and restore the springs and feeding rills of West Fork and prevent a farther diminution of the stream. After stating that there are many places in a similar condition to West Fork, he concluded: "We welcome the new decade and the conditions of advancing civilization, yet fear lest a further destruction of the woods around the sources of West Fork and continued neglect of their reproduction may ere long dry up the stream, and the fertile valley become parched and desolate."

CLIMATES FAVORABLE TO FORESTS.

Dr. J. Beaufort Hurlbert, of Ottawa, sent a paper on the "Climatological Range and Geographical Distribution of Forests and the climates favorable to them." The cone-bearers are found in a broad belt from about parallel 45 on the Pacific, running north, west of the mountains, and sweeping down by Hudson Bay and the Atlantic coast. In the interior, the deciduous trees stretch far north, and this, the most remarkable forest on the continent, consists of maple, beach, elm, basswood, oak, chestnut, cherry, butternut, walnut, hickory, ironwood, magnolia, birch, poplar, and more than 50 others. The birch and poplar go even farther north than the coniferæ, which mingle with all these trees. The deciduous trees grow where there are high temperatures and uniform rains in summer; the coniferæ frequent districts of cooler summers and damp atmosphere. The southern central part of the continent, west of the Mississippi, between parallels 30 and 50, have hot summers with little rain, and are destitute of both sorts of trees. Going north from the boundary, by Winnipeg and the Nelson river and sea coast northward, Mr. Bell, of the Geological Survey, found the trees disappear in this order—basswood, sugar maple, yellow birch, white oak, soft maple, grey elm, white and red pine, red oak, black oak, white cedar, serrated-leaf poplar, mountain ash, balsam fir, white birch, banksian pine, balm of Gilead, aspen, tamarac, white and black spruce; the last is found 3 feet thick and 100 feet high in latitude 59°, longitude 96°. Prof. Macoun reports white spruce at Fort Simpson, latitude 62° 5′; and balsam poplar 10 feet thick on Peace River (57° north latitude) and very abundant. Heat and humidity are both necessary to forests. One theory to account for the deserts of the earth was that mountain chains took all the moisture out of the winds on their way from the west. But this is proved to be wrong: Sahara and the Australian deserts have no mountains west of them; the Mexican and Californian coasts are as destitute of rain as eastern regions; the west winds, supposed to leave all moisture behind, give much rain and snow even in the north and east of Canada. Those vast wastes are really so highly heated in summer as to rarify the S. W. winds and make them capable of holding more vapor, so the clouds keep their rain till they enter cooler regions. The treeless regions are identical with the rainless regions; and it cannot be true that prairie fires have kept down the trees, for these districts directly adjoin great forests.

ROMAN EXPERIMENTS WITH THE EUCALYPTUS.

Prof. F. D. HOUGH sent a paper on the above subject. He said the region chosen for the experiment was the Abbey of Tre Fontaine, about three miles from the city of Rome, where the soil, a mixture of sand and clay, was favorable, but the climate was very sickly, so much so that after the harvest was over the inhabitants were all obliged to betake themselves along the "Appian Way" to the more healthy regions among the hills. In 1863 a brotherhood of French Trappists were found willing to risk their lives in the planting of three acres of the Eucalyptus. They returned to the city every night, but in 1874, so great had the improvement already become, that they ventured to sleep upon the premises. In 1879 a company called "La Société Agricole" entered into a contract with the authorities to plant 1,222 acres with the tree at the rate of 12,500 trees per annum. The result of the experiment proved conclusively that the Eucalyptus purifies the atmosphere, partly by the effect of drainage which the trees secure, in the evaporation from their leaves, and partly by the aromatic emanations that they perceptibly diffuse in the atmosphere. The Eucalyptus acts as a suction pump drawing water from the soil and giving it off as vapor from the leaves, to the extent of four or five times the weight of the leaves. There are now about two hundred and fifty acres planted with Eucalyptus around the monastery of Tre Fontaine. Though this region was once so infested with fevers that it could not be inhabited, it now supports a considerable permanent population among whom fevers are but occasionally and slightly experienced. The author of the paper then points out the value of this experiment in rendering it possible to reclaim other insalubrious and malarial regions and make them habitable.

ECONOMIC TREE PLANTING—HOW AND WHERE.

Mr. B. Gott contributed an extensive paper with this title. He suggested in the course of an introduction on the more abstract phases of the question, the leaving of blocks of trees when clearing the land. The paper dealt first with the sources of timber supply. There is Nature's way of propagating by seeds, which can be used tenfold by intelligent men. It is as well to sow the seeds as soon as possible after they are ripe. The poorer kinds of timber may be propagated by their sprouts or off-shoots, saving time and the care of seed beds. Coppices are the growths from stumps of cut trees. The varieties of ash, elm, oak, poplar, cottonwood, linden, chestnut, sycamore, birch, elder and hazel, are the best for sprouting, the oak being the only very valuable one. Budding and grafting for timber is only practised on the more valuable kinds. Layering is little used for this purpose. Propagation by seeds seems best, but should be done by experts. In this country two or three years may be saved by getting seedlings from the forests. Then comes the management of the timber supply. The system of frequently transplanting young trees is advocated. Room is saved by having them at first in nursery rows, and they shade each other. The trees should ultimately stand 20, or in some cases 30, feet apart, and the thinnings will pay. Capital, time, labor and faith are all necessary to tree planting: still, it is a necessary work, and will repay itself. A suggestion is made to plant and tend a piece of land for information as to practical results. The power of legislators should be exercised in encouraging new growths of timber and in gathering and distributing information on the subject.

PLANTING IN THE WEST.

Dr. Warder gave some very interesting information from the correspondence of Mr. J. T. Allan, tree-planter of the United Pacific Railway. In the past season he handled two million trees for planting along the road; and planted evergreens at the stations. 200 catalpas were planted at Sherman, 8,000 feet high. Much planting has been done this year in Nebraska, and fruit and other trees are very successful. Arbor Day has long been a great institution there. There are cottonwood trees 18 years old, 70 feet high and 7 feet in girth. Their owner has 20 acres in timber, and white willows all around his farm. Another farmer began planting in 1861, and now has 160 acres of trees. White willow is much esteemed as a wind-break. Another has "no better crop than trees." The Secretary of the Kansas Horticultural Society, says there are 92,839 acres of planted trees in that State, including 39,108 in cottonwood, 6,433 in maple, 5,895 in black walnut, and 1,215 in honey locusts. The Secretary of the Board of Agriculture of Nebraska says that on Arbor days they have planted twenty million trees, and the State is being much benefited. Mr. Allan estimates that 58,000,000 trees, or 100,000 acres, have now been planted in Nebraska.

TIMBER CULTURE A NATIONAL NECESSITY.

Mr. D. C. Schofield, of Elgin, Illinois, sends a letter to the Congress in which he gives the following quotation from a work of his bearing the above title:

"Our duty, then, is remarkably indicated by Divine Providence. This work is ours. God forbid that we should shrink from its responsibility. A nation's want calls us to it. Its future wealth and prosperity in an important sense are suspended on the action we take. Shall we prove recreant to this high trust? Never!"

Some years ago Mr. Schofield wrote an essay on "The duties of Government with regard to Forestry," which received the patronage of the States and General Government, and in 1876 eighty millions of trees had been planted in Iowa alone, in consequence, it is presumed, of the influence of the essay.

TREE CULTURE AND PLANTING.

Mr. J. A. Mathewson's paper on this subject remarked on the French law, by which wood could only be cut, in one year, from one out of thirty sections of a farm, and replanting trees has also to be carried on, so that in thirty years the first section may be cut again. It is suggested to plant the highways with fruit trees for the poor, with the restrictions necessary to keep the fruit till ripe. Another suggestion is the boring of Artesian wells, which is said to have made quite a difference in the climate of Egypt.

The following gentlemen represent the Ontario Government in the Forestry Congress:—James Mills, Wm. Saunders, P. C. Dempsey, D. W. Beadle, Thomas Beall.

G. B. Cowper, Esq., Superintendent of Woods and Forests, Ont., represents specially the Department of Crown Lands, Ontario.

Professor Hough is to be the editor of a new "Journal of Forestry," which is about to begin its career.

PUBLIC MEETING—ADDRESSES BY GEN. EATON, PRESIDENT LORING AND HON. MR. JOLY.

The Congress held another public meeting in the evening in the Queen's Hall, the attendance of citizens being fully equal to that of the preceding evening. The band of the 65th Rifles was again present and played several pieces. On the platform were the Hon. Mr. Joly, who took the chair, Hon. Mr. Trudel, Hon. G. Bryson, Dr. Andres, Mr. Thayne, Dr. Howard, Mr. Marler, Mr. J. K. Ward, G. W. Stephens, M. P. P., T. C. Keefer, C. E., Mr. Taché, Deputy Minister of Crown Lands for the Province of Quebec, Mr. Beaubien, and other gentlemen, members of the Congress.

The Hon. Mr. Joly introduced the Hon. Gen. Eaton, Commissioner of Education for the United States, who had kindly consented to address the meeting.

Hon. Gen. EATON said that, having had opportunity to observe most of the forests in the United States, he was able to appreciate the importance of this meeting. But he was here in his capacity of education. Forestry was a subject on which the general public must first be informed before they can take the remedial measures called for by the needs of our forests. Man should not be the enemy of the tree when God had placed them side by side to react upon each other for man's better health and greater happiness (applause). The tree was man's friend, and he should be taught so to consider it. We must have text-books for the schools and scientific magazines, to set forth the importance of forestry. Since Dr. Hough had been appointed a commissioner to investigate the whole subject on this continent and in Europe, a great advance had been made in the education of the public mind. What was specially needed now was a scientific journal such as was projected by Dr. Hough. A text book had already been prepared, and it was desired to introduce the subject into the two hundred normal schools of the United States, that thence the knowledge might descend to the children that God made the tree, and that it was their friend. (Applause.)

The Hon. Dr. LORING, President of the Congress, and also Commissioner of Agriculture for the United States, now arrived, and took the chair. In a few pleasant introductory remarks he adverted to the struggle now going on in Egypt between the English and Arabi Pasha, and declared that his sympathies were heartily with the English. (Applause.) Although he knew but little personally of tree planting, he had profound conviction of the importance of forestry to the American and Canadian peoples. In the United States they believed, with the great Edmund Burke, that it required more judgment, more foresight, and more care to run a farm than any other business that can be undertaken. He presumed the same opinion prevailed in Canada, as the two people had many ideas in common, though they did not all think alike on the reciprocity question. (Laughter.) However, they were all able to get a living, he hoped, on both sides of the line. The great question pertinent to both countries was how the farmer could live and prosper to the benefit of his country and the benefit of himself and children. While everybody believed in and admired farming, it was a business that required more defenders than almost any other calling. We had agricultural journals, colleges, schools, exhibitions and many other influences to make popular a calling in which, however, nine-tenths of the people were engaged. No other calling on earth so attached a boy to his birthplace as agriculture, or so strengthened in his heart a passion for home. Who was it that took part in the "little misunderstanding" that occurred between England and the American colonies more than a century ago? Ralph Waldo Emerson, one of the greatest English prophets of this age had said, speaking of Concord and Lexington:

> "Here the embattled farmers fired the shot
> That echoed round the world."

He did not say the embattled blacksmiths (laughter), the embattled doctors or lawyers, the embattled members of parliament, or the embattled Presidents of Forestry Congresses (laughter); no, but the embattled farmers. (Cheers.) Agriculture was, in truth, the basis of a nation's greatness. Out of the $800,000,000 of exports from the United States at the close of the war, $650,000,000 of it was for agricultural produce. The people in the States inherited from their Saxon ancestors a love for land which made a man hold on to his acres with a grip that nothing but death could weaken. The hon. gentleman continued to speak for over an hour in a strain of mingled instruction, banter and witticism of which no abridgement could give an adequate idea. In conclusion he referred to a misunderstanding that occurred this afternoon in the meeting of the Congress, between himself and Dr. Howard. He said he had since become convinced that he had entirely mistaken the tenor of Dr. Howard's criticism upon his (President Loring's) remarks upon the relation of science to forestry, and he now freely confessed his error, as one gentleman should do to another. He was convinced that Dr. Howard had no intention of reflecting upon him. He took his seat amid applause.

After music from the band,

Mr. JOLY said Canadians ought to be grateful to our American friends for holding their Congress in this city. He must confess that the address of the Hon. Mr. Loring had completely dispelled any false notions he had hitherto entertained concerning our American neighbors. We were accustomed to look upon them as a people devoted to the pursuit of the almighty dollar, but we had just had abundant evidence that in no country was the worship and love of nature, of country and of home more general and more intense than among our American friends. We could grasp them by the hand and rejoice to labor with them in the promotion of the interests of forestry and kindred objects. Although not a citizen of Montreal, the people of this city had deputed him to speak in their name, and in this capacity he now bid our American friends God speed, and, thanking them again for their visit, hoped to see them often hereafter on the same noble, patriotic and humanitarian errand.

The meeting then dispersed.

THIRD DAY.

The Congress met at half-past nine o'clock to-day, the Hon. Mr. Joly in the chair.

The Hon. Mr. BRYSON presented the report of the committee appointed to memorialize the Government with reference to preventing forest fires. The report recommended, first, the reservation of all pine and spruce lands, unfit for settlement or lumbering purposes exclusively; second, prohibition of the burning of brush by settlers in the vicinity of fir trees during the months of May, June, September and October; third, the division of the timber country into districts, and the appointment of police under a superintendent with magisterial powers, whose duty it shall be to detect and punish offenders, and provide for the extinguishment of fires; fourth, the cost of maintenance of this protective force might partially be met by the imposition of a moderate tax on the parties owning or leasing timber lands.

The report was adopted.

Mr. FURNOW presented the report of the Committee appointed to revise the Constitution. Among the new rules recommended was one that papers must be sent two weeks before any meeting to the Corresponding Secretary for classification.

The report was adopted.

Mr. THAYNE said it was very desirable that local associations for the advancement of forestry should be established in various parts of the country, so that the Congress might be composed of delegates from each association.

Mr. BEADLE moved that the organization of local associations be encouraged, so that all parts of the North American continent may be represented in the Forestry Congress.

Motion adopted.

The Congress then proceeded to the election of officers, as follows: Hon. Mr. Loring, President; Hon. H. G. Joly, First Vice-President; Dr. J. A. Warder, Second Vice-President; W. S. Little, Montreal, Secretary; Joseph S. Fay, Mass., Treasurer.

Prof. Hough suggested St. Paul as the place of next meeting of Congress. It was generally thought desirable to have the meeting at or about the same time and place as the American Association for the Advancement of Science, and it was the general opinion that its next meeting would be in Minneapolis, Minnesota.

It was resolved that the fixing of time and place of next meeting be left to the Executive Committee.

Mr. HICKS moved that the Executive Committee appoint referees to prepare papers on legislation with regard to forest fires, prevention and control of forest fires, distribution, technology and forest management of the white pine.

Motion agreed to.

The Congress then tendered its thanks to the Governments of Ontario and Quebec for the interest taken by them in sending delegates to this Congress; to the Mayor of Montreal and citizens generally for the interest taken by them on this occasion; to the press for reporting proceedings and papers; to the various railway, steamboat and telegraph companies who have afforded facilities to gentlemen at tending this Congress.

Dr. WARDER moved that the thanks of this Congress are to the Geological Survey, Ottawa, for a set of reports; to the Commissioner of Crown Lands of the Province of Quebec, for specimens of Canadian woods; to the Hon. Mr. Joly for presiding at the meetings; to the citizens of Ottawa for their invitation to visit that city; to the American Association for the Advancement of Science for an invitation to accompany them to Ottawa; to the ladies of America for their interest and assistance in the promotion of forestry; to the Montreal Amateur Athletic Association for an invitation to use their library; to gentlemen who have sent valuable papers to the Congress, due and are hereby tendered to Mr. James Little, Montreal, the Nestor of American Forestry, for his long continued efforts in behalf of American Forestry.

Motion agreed to.

Prof. HOUGH moved a vote of thanks to Mr. WM. LITTLE, of Montreal, for his great labor and self-sacrificing efforts in the interest of forestry, and of this congress particularly.

Mr. BEADLE expressed the thanks of the Ontario delegates to Mr. Little. The present meeting was superior in usefulness even to the Cincinnati meeting, and much of it was due to Mr. Little.

Mr. TACHE, Deputy Commissioner of Crown Lands for Quebec, concurred in the remarks of Mr. Beadle.

Motion agreed to.

Mr. LITTLE returned thanks to the Congress on behalf of his father and himself. He really thought that there was no more patriotic man living than Mr. James Little. Another gentleman, perhaps, equally worthy of gratitude for his efforts on behalf of Forestry was Dr. John A. Warder, Ohio, to whom he moved a vote of thanks.

Motion agreed to.

The business of the Congress being concluded, it adjourned to meet at the call of the Executive Committee.

DR. CULLIS AND THE "FAITH WORK."

FAITH CONVENTION AT OLD ORCHARD.

(*Special Correspondence of the Witness.*)

On the sixth day of the Convention an opportunity was given for the workers under Dr. Cullis to tell a little about what they were doing. In the first place, however, Dr. Cullis gave a rapid sketch of how the work had grown upon him since, in 1862, he had given himself wholly to the Lord and devoted all his earning, to the Lord's service. He was a physician in good practice, but he soon felt that by giving through ordinary channels a large proportion of the gift was absorbed on the way, and besides much might be given unwisely. The text was impressed upon his mind, "to every man his work," and when one day a stranger called upon him in behalf of a poor homeless consumptive, who had been refused admission into the public hospitals because incurable, a voice within said to him, "there, that is your work." But he had no money to establish a home for consumptives and he did not see his way clear to wait to save it or ask others for help. At that time he had heard of Franke's great orphanage in Germany, sustained by faith, but not of Mr. Muller's work. His mind, however, before this had been much exercised about the promises such as "ye shall ask what ye will and it shall be done unto you." He believed these promises to be true. Indeed he had solemnly vowed to believe every word between the two covers of the Bible whether he understood it or not. He continued praying and working, believing that the Lord would supply money for the work when the time came. In 1864 he bought a house and fitted it up as a home for consumptives, the Lord supplying the means as they were needed, and within two years a second and a third house was added and also a home for the children robbed by death of their parents. The work continued to grow, other houses being added in the course of years with a chapel and tract repository. Soul rest in God brings answers to prayer, and the receiving of the answer is not remarkable. It would be remarkable were the prayer not answered. In the sixth year of the work it was evidently desirable that a new site should be obtained for the institutions and two persons attracted his attention to the Grove Hall property in Boston Highlands, for which he was told that the owner had refused $125,000. The amount of the sum made no more impression on his mind than if 50 cents had been mentioned, and he shortly after bought the property, covering eleven acres with suitable buildings for ninety thousand dollars with easy terms of payment. On these grounds there is now the Consumptives' Home, accommodating 80 or 90 patients; two Children's Homes, with 27 or 28 children; a cottage for cases of spinal disease; a Faith Cure House, built out of the small voluntary contributions of those who had been cured by the prayer of faith; a chapel and a Deaconess' House. In the city proper there is a Tract Repository and a Faith Training College with chapel. Also a mission in Lewis street with hall and coffee room, for work among the sailors, and a church at Cottage street, Dorchester. At Walpole, nineteen miles from Boston, there is a home for cancer patients; there are also a Tract Repository in New York, Philadelphia and London. At Boydton, Virginia, an important work is done among the freedmen. Four years ago at this Convention a gentleman brought him (Dr. Cullis) a paper with an advertisement about the sale of a college property in Virginia which had originally cost $150,000. This building, with a good deal of land, was purchased for $62,000. There are also mission stations occupied at Basim and Balasore in India, at Cape Town in South Africa, and in California, amongst Chinese, and he is praying to God that this work may belt the earth. It is now carried on at an expense of about $40,000 a year, not one penny of which is asked for except from the Lord. In the history of it there were trials that cannot be told, waves upon waves of trouble, but the Lord had kept his soul in perfect peace and had provided means to the extent of half a million and laborers as they were needed. The Lord takes men and women and sets them on fire. The laborers were consecrated to the work which was real work with difficulties and trials and they received no salaries. Dr. Cullis said that he himself knew no care, though many a time he rose without a cent in his possession he had never been kept awake an hour by anxiety. He would rather have the promises than ten millions of money. The Bible says "Wo unto you when all men speak well of you." Much evil had been spoken of him, but he had given his reputation to the Lord to take care of. The first time that a lie had been circulated about him to the effect that he had denied a man the last rites he took it to the Lord in prayer, and promised that he would never reply to any lie.

The Rev. B. B. Scott then described his mission work at Cottage street and told how his five year old boy had been praying for a hammock which there seemed no prospect of his obtaining. He was distressed lest the child's faith should be hurt by the disappointment when it occurred to him that the Lord cared more about his boy's faith than he could care. Shortly after he found a clumsy looking parcel sent to his address, and carried it home without a thought except that it might have been better put up. When he opened it he found a hammock sent by a lady who could have had no knowledge of the child's desire.

Miss French, the matron of the Consumptives' Home, told how she had charge of 70 or 80 patients, some of whom were in reduced circumstances, while others had spent their substance in riotous living, and came in often covered with filth. Patients often declared that the Home was like heaven, and many interesting conversions took place. She said it was remarkable how workers had been provided as they were needed. One day she found that a nurse would be obliged to leave at eight in the evening. Two wards would thus be left uncared for, as no one could be spared to attend to them. Shortly after she was summoned to the door, and a capable looking woman enquired, "Do you want a nurse? She was engaged, and came that night and had since been a faithful worker. It appeared that she had come to the city for the purpose of engaging in business, and had gone to the Home that day merely to see it. But as she entered the grounds she said that the thought came to her that it appeared to be a pleasant place, and when she saw the matron she thought she looked young and cheerful, and the words applying for a situation came unexpectedly to her lips. Miss French said moreover that they felt themselves to be specially under God's care when Dr. Cullis was away, and that perplexing questions never arose at such times. "Supposes" she said had been taken out of her life, and she had found a simple rule of action in the words—"Whosoever of you will be the chiefest shall be servant of all."

Mr. Fowler gave a short account of the hopeful work done among sailors and others in the Lewis Street Mission, and the Rev. F. D. Sanford told of his recent move to New York, where he was holding two weekly "consecration" meetings, and also one weekly meeting in Newark, N. J. Miss Culver's work in the Philadelphia Repository, and in holding a weekly meeting for prayer and faith-healing was alluded to, and then the workers in the Boydton Institute, Va., the Rev. J. T. James and Mrs. H. B. Sharp, gave a most interesting account of the Lord's dealings with that institution. They had 104 students, mostly from sixteen to thirty years of age, and many of these had saved money to support themselves at school out of $12 a month of wages. Numbers of the students are unconverted when they come, and are merely seeking an education. But they almost immediately turn their faces to the Lord, and have no rest until they find him. Consecration meetings had also been held, and about fifty students had received the fulness of the blessing. They are trained to work by faith. One young man, after receiving the blessing, said that "he had always been bothered before to find the promises, but now the Bible seemed all promises. He commenced taking them, saying to himself, 'That's mine; that's for me,'" till they came so thick and fast, and seemed so many, he thought, he had better take the whole thing. So he shut up the Bible, looked up to God, and said he 'would take it all; it was all promises from cover to cover.' He said his Christian life had been heretofore like a person learning to swim; he had been able to keep his head above water by a good deal of scrabbling and effort, but he had at last learned that the water would hold him up if he kept still; and now he was just floating on the top, underneath was Jesus' love and he had perfect rest." This young man was invited to a place where he would have a good salary, but he heard of a spot in the mountains where no money could be raised to pay the preacher, and he decided to take that, and trust in the Lord for his support, saying that some one else could be found to take the salary. Twenty-five Sunday schools are kept up by the students in the neighborhood of the Institute. In the beginning of the year they had been in straits for want of furniture, but in October twelve waggon-loads were sent in. They have a large reading room, which is very useful to the students. They had no sickness until toward spring. When it came they felt that this might be God's means of teaching the people lessons of faith, and they prayed ... marked answers to prayer every time in healing the sick. This prayer was remarkably answered. A girl, for instance, was taken home with quick consumption. The second time that she was prayed for she said, "I'm healed," and a letter just received said that she had not had a sick day since.

One of the hymns sung most frequently at this convention was "The Altered Motto," by the Rev. Theodore Monod. It is as follows:

> O, the bitter shame and sorrow
> That a time could ever be,
> When I let the Saviour's pity
> Plead in vain, and proudly answered,
> All of self and none of Thee.
>
> Yet He found me, I beheld Him
> Bleeding on the accursed tree,
> Heard Him pray "Forgive them, Father,"
> And my wistful heart said faintly,
> Some of self and some of Thee.
>
> Day by day His tender mercy
> Healing, helping, full and free,
> Sweet and strong and, oh, so patient,
> Brought me lower while I whisper'd,
> Less of self and more of Thee.
>
> Higher than the highest heaven,
> Deeper than the deepest sea,
> Lord Thy love at last has conquered;
> Grant me now my soul's desire,
> None of self and all of Thee.

Other interesting incidents of the Convention must be deferred for another week.

J. E. D.

Montreal, August 17.

A CONNECTICUT GIRL IN A CANADA CONVENT.

(*Correspondence of the New York Observer.*)

QUEBEC, July 10th, 1882.

Within a few days a very painful case has come under my observation, that of a young girl whose parents were both Protestants. Her mother is a member of a Protestant church in New Haven, Conn. Fourteen years ago she married, a second time, a French Catholic, who now, according to her statement, goes with her if he goes anywhere. This child of a former marriage, in order that she might acquire the French language and be able to converse with her stepfather's guests, was, about three years ago, sent to a nun's school in Champlain, Province of Quebec.

At the end of each year she returned home for vacation, until last year, when she wrote her mother, telling her on what day the examination would be over, and requesting her to make preparations for her return, naming a certain day. On that day, instead of her child, the mother received a postal card, stating the girl was not coming home, but giving no explanations. A telegram was sent, urging the girl to return home or say what detained her. No answer was received, and the mother went on to Champlain, only to learn that her daughter had been sent to the mother house (Bon Pasteur), in Quebec city. About a week since the mother arrived in Quebec, and had an interview with her girl; but the girl utterly refused to go with her. The priest and nuns, in answer to the mother's entreaties, only replied that if the girl wished to go they would not detain her, but if she chose to stay they would not thrust her out. The girl told her mother she could never save her soul outside the convent. Who taught her that?—that she was to complete her education with all modern accomplishments; and when her mother asked who was to pay for this, the girl said a certain priest and a certain gentleman had been told by the priest he must contribute one hundred dollars per year toward her expenses in the convent, which he agreed to do upon condition that the consent of her mother and stepfather was obtained. The stepfather had no desire for her to remain in the convent, and would himself have come to fetch her home, but he thought her mother would more easily prevail upon her.

A brother-in-law of the stepfather accompanied the mother to the convent, but was not present at the interview between mother and child. The mother saw no relenting on the part of the girl, and asked her how it was she could deceive and mislead her so. The girl said she did it in the Lord's service. When she left her mother she went into another room or corridor where were a priest, some nuns, and her stepfather's relative. Bursting with tears she cried: "What ought I to do? What ought I to do?"

Although a Romanist, the relative proceeded to advise her to go with her mother, when the priest told him he had no business there giving advice, and he must remain silent and let the girl choose for herself. This the relative told the mother when they left the convent. The girl elected to remain, and the mother went on to Montreal, where she obtained legal advice from J. McLaren, Esq. Acting upon his written opinion, she returned to Quebec, and after much painful anxiety to procure male help to assist her in removing the girl by force, if need were, for such a step, she again called at the convent, accompanied by Hon. J. Wasson, United States Consul, who rendered her every assistance in his power, and procured for her the best legal advice in this city. After a good deal of persuasion, the girl consented to go with her mother, avoiding the necessity for force being used. The mother, in order to get her away, at the girl's request signed a paper to say she would be allowed to return should she so desire. The nuns all this time offered no opposition; their work was done beforehand on the mind of the girl.

REMARKS.

The letter above is from a responsible man, and a Presbyterian clergyman in Quebec endorses it to us as a truthful statement. It is only another of many similar cases where the folly and sin of Protestant parents work the ruin of their children. To put a girl into a Roman Catholic Conventual School is putting the child into the utmost danger of being ruined for this world and the world to come. We have often said this, and shall say it again, whether it is heeded or not.—*Editors of New York Observer.*

PERSONAL.

The Marquis of Bute is building a new house on the site of the old one of Mount-stuart. It will be finished next summer and will cost $1,250,000.

It is announced semi-officially that Mr. Archibald, the British Consul General at New York, is about to become Sir Edward M. Archibald, K.C.M.G., in recognition of his long and important consular services.

No date has been definitely fixed for the visit of Her Majesty to Drumlanrig Castle, the Nithsdale residence of the Duke of Buccleuch, but extensive preparations are in progress at that place in anticipation of the event.

The Duke of Argyll, in the course of a recent speech, said that gentlemen had rented land from him and built splendid mansions thereon, on the understanding that there were to be no whiskey shops. Although he could get any amount of land feued for whisky shops he would not give any, as he intended to keep faith with those who had rented land from him on the condition that they were to be freed from the annoyance of whiskey shops in their midst.

THE AMERICAN ASSOCIATION.

FIRST DAY—WEDNESDAY.

OPENING OF THE MEETING—MANY NEW MEMBERS PROPOSED.

All day Tuesday the rooms at the College and at the Windsor presented a scene of the greatest liveliness, to use a very mild word, and the Permanent Secretary displayed a Christian resignation that was quite exceptional under the hot fire of questions and entreaties about every conceivable subject from every conceivable sort of scientific and unscientific man or woman. The day, for the officers of this Association, includes most of the night.

Quite an exceptional occurrence in the history of the Association is the fact, very creditable to Montreal, that 160 new names were on Tuesday proposed for membership.

THE OPENING IN WILLIAM MOLSON HALL.

There were not many delegates in the Hall at 10 o'clock, the hour for opening; but at that hour they commenced to arrive from all quarters, though the red badges indicated but fifty percent of those present as members of the Congress. Many of our citizens, most prominent in educational and philanthropic circles were present. There were many ladies in the room and some of them wore the red badge of the Association. It must be said that they wore them in a becoming manner and did honor to them. There were no gew-gaws about their attire and a thoughtful expression was upon all young and old. For the most part they wore ordinary walking and travelling suits, and neatness and elegance robbed them of nearly every tinge of the "blue stocking."

At about ten minutes past ten the President and Vice-President entered the Hall followed by Dr. Dawson and the Mayor of Montreal, the Hon. J. L. Beaudry, Chancellor Day, John Redpath, His Lordship Bishop Bond, the Rev. Principal MacVicar, of the Montreal Presbyterian College, Dr. T. Sterry Hunt, and others.

Professor Brush opened the proceedings by introducing the President elect, Dr. Dawson, of Montreal.

Dr. Dawson said he thanked them from his heart for the honor that had been done him by his unanimous election to the position of President. He looked upon it as the highest honor that a scientific man could attain. He was aware that in the election the Association had sought to do honor to Canada, but he valued it nevertheless. He trusted that they would go on in their duties and would act as a body of scientists who forgot for the moment the geographical position of their countries, looking down from their pedestal upon the governments that made unnatural boundaries, and striving to make the meeting one of the greatest of the many successful meetings that had been held. (Applause).

He then called upon Bishop Bond, who asked the blessing of the Almighty upon their labors, trusted He would add the light of His presence to these deliberations, would be with them during their sojourn here and would bear them safely home again when their labors were completed.

Dr. Sterry Hunt then welcomed the association in the name of the local committee. He gave a resume of the history of the association from 1848 when in Philadelphia it took the name of the American Association for the advancement of Science. He explained that they were holding but their thirty-first meeting—the American civil war and other causes having prevented them from having held more. He showed its progress from time to time. It had met in Montreal 25 years ago. From three sections in Philadelphia they had progressed to nine sections to-day. In behalf of the local committee he said they would endeavor to point the members to the museums, wharves, railways, steamers, manufactures, &c., and would endeavor to show them the city of Ottawa and the Geological Survey; also the city of Quebec and Lake Memphremagog. After the opening association services the members would be invited to lunch. He was certain the citizens appreciated highly the honors done the city of Montreal by their presence. (Applause.)

Mayor Beaudry was received with applause, and said he was highly honored in being able to welcome the delegates in the name of the City Council and citizens of Montreal. He would assure them the welcome was hearty and hoped that they would find it so.

The President apologized for the absence of the Hon. Lieutenant-Governor Robitaille who was unavoidably absent in a distant part of the province. He invited Dr. Thorburn to say a word or two.

Dr. Thorburn said that Ottawa would consider their city honored by the proposed visit. They had a great many points of interest in that new city and he trusted they would enjoy them.

Dr. Dawson then welcomed the delegates in behalf of Quebec, where there were attractions not lightly to be passed by. He showed that very great interest had been shown in their meeting not only by Montreal city but by the whole Dominion. For the time being the city was the scientific capital of America, as all eyes would be turned hitherward. The meeting held in 1857 had done much for science, and he believed this one would do much more. He reverted to the number of their members who had passed away, but was pleased to see so many of those who had grown from youth in 1857 to world renowned men in 1882. They could easily find out the great men of the past; but it was difficult to find in the more obscure men of the present meeting the great men of the future. For that reason he bespoke for all the kindness and attention of the citizens. Montreal was not in 1857 the great city of 1882, and those who had been with them then could now meet and congratulate them upon the progress then made. He welcomed the members not only to their lunch to-day, but to their libraries, their homes and their other attractions. In the capacity of their President, and as a cosmopolitan man of science he trusted that they would make the Association honorable, useful and productive of progress. He read a letter from His Excellency the Marquis of Lorne regretting his absence.

Mr. Frank W. Putnam, Permanent Secretary, gave some explanation as to their funds. He detailed the donations made, said 106 papers had been entered for reading, and advised the members as to the routine to be followed during the Congress.

Dr. T. Sterry Hunt said an invitation was extended to all to visit the Art Association's gallery, the President of which, Judge Mackay, would have been present to give an account of what had been done, but for illness.

The General Secretary then announced the obituary notices of deceased members as follows:—Zacharia Allen, Providence, R.I.; J. G. Barnett, New York; George S. Blackie, Nashville, Tennessee; Albert S. Briggs, Springfield, Massachusetts; Mrs. Mary H. Cantwell, Crawfords, Ind.; Frederick Collins, Washington; J. M. Cramp, Wolfville, N.S.; Charles F. Crocker, Lawrence, Mass.; E. A. Dalrymple, Baltimore, Md.; Caleb G. Forsley, New Orleans; J. Goldmark, New York; George W. Hawes, Washington; Thomas P. James, Cambridge, Mass.; Lewis H. Morgan, Rochester, N.Y.; Charles B. Bayn, Saratoga Springs, N. Y.; J. Duncan Putnam, Ablewort, Ia.; W. B. Rodgers, Boston; Elihu Boot, Amherst, Mass.; William Sheppard, Drummondville, Q.; David B. Smith, Springfield, Mass.; Chas. Spinzie, St. Louis, Mo.; A. Remsen, Thompson, N.Y.; Wm. X. Beaux, Philadelphia; J. Craig Watson, Ann Arbor, Mich.; Miss G. Welch, Lynn, Mass.

Mr. W. Saunders read the following list of new members:—Col. Jas. W. Abert, Newport, Ky.; W. E. Archambault, Montreal; Rev. W. D. Armstrong, Ottawa; Miss Mary Austin, Milton, Mass.; Frank Baker, M.D., Washington, D.C.; Prof. Philip S. Baker, Ashbury Univ., Greencastle, Md.; Miss Mary A. Baldwin, Newark, N.J.; H. Ballard, Lenox, Mass.; Chas. H. Banes, Philadelphia; Miss Martha M. Barker, Lowell, Massachusetts; Henry Barnard, Hartford, Conn; F. Foster Bateman, Montreal; P. J. U. Baudry, Beauharnois, Que.; D. W. Beadle, St. Catharines, Ont.; Thos. Beal, Lindsay, Ont.; J. A. U. Beaudry, C. E., Montreal; A. Melville Bell, Georgetown, D. C.; C. A. Bell, Washington, D.C.; Mrs. Albert S. Bickmore, New York; Geo. J. Bowles, Montreal; M. H. Brissitte, Montreal; Prof. C. J. Brown, Randolph, N. Y.; Prof. W. H. Burr, Troy, N.Y.; Ald. G. Caldwell, Torpedo Station, Newport, R.I.; H. K. Cargill, Montreal; Chas. Carpmael, Toronto; J. H. Childe, Boston; Prof. J. Mason Clarke, Northampton, Mass.; Miss Cornelia M. Clapp, South Hadley, Mass.; Amory Coffin, Phœnixville, Pa.; Miss E. O. Conro, Kelseville, N.Y.; Dr. B. E. Cotting, Roxbury, Mass.; F. W. Crosby, Washington; the Hon. Rodney R. Crowley, Randolph, N.Y.; Miss Eliza Curtis, Boston; Abijah Curtiss, New York; Peter C. Dempsey, Trenton, Ont.; Wm. H. Dennis, Coast and Geodetic Survey, Washington; John M. Denton, London, Ont; J. Richards Dodge, Agricultural Dept., Washington; Rev. James O'Dorsey, Bureau of Ethnology, Washington; Andrew E. Douglass, New York; Walter Angus Dun, M. D., London, Eng.; Rd. J. Dunglison, M. D., Philadelphia; Robt. G. Eccles, M. D., Brooklyn; Prest. J. T. Edwards, Chamberlain Inst., Randolph, N. Y.; Wm C. Esty, Amherst, Mass.; Frank H. Fairfield, Amherst, Mass.; A. G. Fenwick, M. D., London, Ont.; Bernard E. Fernow, S. Cantington, Penn.; James Ferrier, jr., Montreal; W. F. Ferrier, Montreal; Sanford Fleming, Ottawa; James Fletcher, Library of Parliament, Ottawa; Wm. W. Folwell, Minneapolis, Minn.; Cyrus G. Force, jr., Cleveland, Ohio; Rev. T. W. Fyles, Cowansville, Que.; Benj. J. Gilbert, Utica, N. Y.; H. D. Garrison, Chicago Ill.; Stephen S. Haight, New York; Miss Mary Hale, Roxbury, Mass.; R. G. Haliburton, Ottawa, Ont.; Lyman B. Hall, New Bedford, Mass.; Albert P. Hallock, New York; Henry Harding, Salem, Mass.; Miss A. Maria Harmon, Ottawa, Ont.; Dr. P. L. Hatch, Minneapolis, Minn.; Henry Henning, Finance Department, Quebec; N. H. Henning, Minneapolis, Minn.; F. H. Herrick, Burlington, Vermont; Charles N. Hewitt, Minneapolis, Minn.; Prof. Lewis E. Hicks, Denison University, Granville, Ohio; John S. Hicks, Roslyn, N. I.; Jos. L. Hills, South Boston, Mass.; Miss Mary H. Hinckley, Milton, Mass.; Arthur Hollick, New Brighton, Mass.; Miss Rose Hollingsworth, Milton, Mass. Joseph Holt, M.D., New Orleans, La.; George H. Hudson, Plattsburg, N.Y.; Ray Greene Haling, Fitchburg, Mass.; Charles W. Hutchinson, Utica, N.Y.; George Iles, Montreal; John G. Jack, Chateauguay Basin, Que.; Mrs. Isabella James, Cambridge, Mass.; Lewis C. Jones, Hartford, Conn.; Wm. Schuyler Johnson, Washington; Prof. James Kirkland, Toronto, Ont.; Dr. Isidore Kitzie, Cincinnati, O.; Miss Elizabeth G. Knight, New York; J. E. Lathrop, Bridgeport, Conn.; L. A. Huguet Latour, Montreal; Prof. George Lawson, Dalhousie College, Halifax, N.S.; Prof. George Dudley Lawson, Cambridge, Mass.; Edward W. Lee, M.D.; Randolph, N.Y.; Joseph Libbey, Georgetown, D.C.; Mrs. Rachel Lloyd, Louisville, Ky.; Horatio Loomis, Burlington, Ont.; Prof. Thos. P. Lomisbury, Yale, New Haven, Conn.; Jos. L'Etoile, Quebec; Jno. W. Lovell, New York; Alb. Lufkin, Newton, Iowa; Prof. Louis L. McInnis, College Station, Texas; W. H. Manning, Reading, Mass.; Prof. Wm. J. Martin, Davidson College, N.C.; Prof. St. Maynard, Massachusetts Agricultural College, Amherst; W. H. Merritt, Toronto; Capt. Jas. H. Merryman, U.S.R.M., New York; President Jas. Mills, Agricultural College, Guelph, Ont.; T. Wesley Mills, Montreal, W. Hamilton Mills, Hamilton, Ont., Mrs. Mary B. Morgan, Rochester, N.Y.; Charles J. Morse, Youngstown, O.; Captain John H. Martineau, William Muir, Montreal; John P. Munn, M.D., New York; Henry M. Neurington, St. Louis, Mo.; Stephen Pendergast, Phœnix, N.Y.; Arthur Perkins, Hartford, Conn.; George Phelps, Nashua, N.H.; Dr. Cyprus Newlin Pierce, Media, Penn.; Louis H. Pignold, Montreal; Professor Johnson T. Platt, Yale; Frederick B. Power, Ph. D., Philadelphia; Prof. George De Purinton, University of Des Moines, Iowa; George Stephen Rennisger, M.D., Minnesota; Edgar Richards, Washington, D.C.; Bates S. Rideout, Lewiston, Me.; Mrs. Susan Riley, Mobile, Ala.; Thomas S. Roberts, Minneapolis, Minn.; Thos. P. N. Rogers, Burlington, Vermont; the Rev. James Roy, Montreal; Prof. Alvah Horton Sabine, University of Vermont, Burlington; Mary Jane Safford, Boston; Daniel Elnier Salmon, Ashville, N.C.; J. W. Sanborn, Hanover; N. H. George, H. Seyms, Hartford, Conn.; Charles S. Schultz, Hoboken, N.J.; Dr. Herbert E. Smith, New Haven, Conn.; Miss Marian M. Smead, Batavia, N.Y.; Marcell N. Smith, Boston, Mass.; Thomas H. Smith, Chicago, Ill.; Miss Augusta J. Solomons, Sumter, S.C.; Miss Maude Cohen Solomons, Sumter, S.C.; Miss Kate C. Solomons, Sumter, S.C.; Jas. H. Stibbins, jr., New York; Horace Edward Stockbridge, Amherst, Mass.; Levi Stockbridge, Amherst, Mass.; Jacob H. Studer, Columbus, O.; J. E. Thompson, Spalding, Mich.; Herbert G. Larrey, New York, C.W. Volney, Mott Haven, N.Y.; Prof. Carl Warnecke, Montreal; Joseph W. Warren, Harvard Medical School, Boston; John Hosea Washburn, Bridgewater, Mass.; Miss Ca. Watson, Salem, Mass.; Prof. J. B. Webb, Cornell University, Ithaca, N.Y.; Hon. Joseph E. Weeden, Randolph, N.Y.; A. W. West, Salem, Mass.; Miss Alice W. Wheildon, Concord, Mass.; J. F. Whiteaves, Geological Survey, Ottawa; F. Cope Whitehouse, New York; Prof. Sarah F. Whiting, Wellesley College, Mass.; Fras. A. Wilber, New Brunswick, N. J.; J. Fras. Williams, Salem, N. Y.; Janet W. Williams, Newton Lower Falls, Mass.; Miss Hannah S. Wingate, Brooklyn, N. Y.; Thos. Fanning Wood, M.D., Wilmington, N. C.—169 in all.

The persons whose names were read were elected members of the Association.

On the suggestion of the President, the English and European scientists attending the meeting were elected members of the Association.

The British Association of South Africa meeting to-day, it was resolved, on suggestion of the President, to send them a telegram of greeting.

After several announcements the meeting adjourned for lunch.

THE LUNCH.

The lunch served in the large tent by Mr. Joyce was a great success in every way, and the visitors were almost as much surprised as delighted at the magnificent decorations and luxurious bill of fare prepared for them. The library was also a great object of admiration, Mr. Taylor, the librarian, having spent great pains and with great success, in making his premises as beautiful as flowers could accomplish. Altogether, all the arrangements have worked in the best manner, and everybody is satisfied. The meeting has been an especially successful one, as shown by the large numbers of names registered up to 3 p.m. The number of registrations were 637.

ORGANIZATION OF SECTIONS.

SECTION A.

Mathematics and Astronomy.—Prof. W. A. Rogers was elected Temporary Chairman, Prof. W. W. Johnson to the Standing Committee; G. W. Hill, Leonard Waldo and C. A. Young, Sectional Committee; W. W. Payne, to the Nominating Committee; F. H. Sherman, R. W. Willson and C. H. Rockwell, Sub-Committee; H. T. Eddy, Secretary.

SECTION B.

This section was organized by Prof. Mendenhall, of Columbus, O., Vice-President of the section, taking the chair, Dr. C. S. Hastings, of Baltimore, acting as Secretary. The following named gentlemen were elected to the several committees:—Standing Committee, Prof. E. W. Blake; Sectional Committee, C. K. Wead, A. Dolbear and H. A. Roland; Nominating Committee, T. F. Jewell; to the Sectional Sub-Committee, N. D. Hodges, Lieut. J. B. Murdoch and S. B. Breckett.

SECTION C.

Chemistry.—The following elections were made: Fellow to Standing Committee, Prof. S. A. Latimore; Sectional Committee, Prof. G. C. Caldwell, Prof. Henry Morley, Prof. R. C. Kedzie. Sub-committee to recommend vice-president and secretary to Nominating Committee, Prof. A. Julian, Prof. Paul Schweitzer and Prof. A. R. Leeds. Fellow to Nominating Committee, Prof. Caldwell; Secretary, Dr. Springer.

SECTION D.

Mechanical Science—Prof. J. Burkitt Webb, Cornell, was elected Secretary in the absence of Dr. Dudley. The elections were not proceeded with, as very few members were present.

SECTION E.

Geology and Geography.—Mr. Cox, of San Francisco, called the meeting to order. Prof. H. S. Williams was elected secretary. Fellow for Standing Committee, Prof. Cook, New Jersey; Sectional Committee, Prof. C. H. Hitchcock, N. H. Winchell, E. T. Nelson. One member for Nominating Committee, Prof. Spencer, Missouri: three members to recommend to Nominating Committee officers of this section at next meeting: Prof. P. W. Shaffer, Alex. Winchell and Gen. Lettz.

Prof. E. T. Cox, San Francisco, announced that having been away travelling he would be unable to deliver a paper.

It was announced that the President's address would be ready for 4 o'clock and the section adjourned.

SECTION F.

Biology.—This section met and elected as Chairman, W. H. Dall, of Washington; Secretary, Dr. William Osler was elected in the absence of D. S. C. Minot, Secretary, in Europe; Fellows on Sectional Committee, J. A. Lutner, W. J. Beal, H. F. Bassett. Mr. L. F. Ward was elected to the Nominating Committee.

The Section then adjourned until 4 o'clock this afternoon.

SECTION H.

Anthropology.—The following elections were made: Secretary, Prof. Mason; Fellow to Standing Committee, Dr. P. R. Hoy, Racine, Wis.; Fellows to Sectional Committee, Prof. A. S. Bickmore, N. Y., Col. Garrick Mallery, U. S. A., Washington, D. C., Prof. N. S. Townsend, Columbia; Nominating Committee, Hon. Horatio Hale, Clinton; Sectional Nominating Committee, Rev. J. Owen Dorsey, Washington; Prof. George H. Perkins, Burlington, Vt., Rev. Joseph Anderson, Waterbury, Conn.

SECTION I

referred the subject of nomination to a special committee to report at next meeting.

SECTION A.

MATHEMATICS AND ASTRONOMY.

In the absence of the Vice-President, Mr. Harkness, from Section A., his address was read by Prof. Eastman. The subject was "Transits of Venus." We are about to have the second transit of a pair, separated by eight years, and there will then be none till June 2004. It was observed on the establishment of the Copernican theory, that transits of inferior planets across the sun must occur, but Halley, in 1716, first worked out completely the idea of using them for finding the solar parallax. The first accurate knowledge of the sun's distance was got from observing the transits of Venus in 1761 and 1769. With telescopes only twenty years invented, November 6th, 1631, Gassendi observed, by means of a hole in a shutter, the transit of Mercury; making an important adition to our knowledge. Transits of Venus only occur in June and December, and at intervals of 8, 105½, 8, 121½, 8, 105½ years and so on. These intervals may be modified, and may be 129½, 105½, 8, 129½ years and so on; or 113½, 8, 121½, 113½ years, &c; or 8, 113½, 121½, 8 years, &c.; or 8, 105½, 129½, 8 years, &c.; or 113½, 129½, 113½, 129½ years, &c., according as the planet's path varies. Kepler predicted the transits of 1631 and 1639; the first was invisible, and he thought that Venus at the second would not quite cross the sun's disk. A young English curate, however, named Horrocks, calculated differently, and he and his friend Crabtree were the only ones to see this, the first recorded transit of Venus, on December 4, 1639. By Halley's method only the points of internal and external contact at ingress and egress can be observed. By Delisle's plan of placing observing stations, the rate at which the shadow cone sweeps over the earth can be observed. The duration of a transit may vary by 20 minutes in different parts of the earth. The transit of 1761 was seen by 176 observers at 117 stations: By British at St. Helena, Cape of Good Hope, Madras and Calcutta, French at Tobolsk, Rodriguez and Pondicherry, Russians on the Tartary and China frontier, and Swedes in Lapland. The widely different results disappointed astronomers, and they abandoned Delisle's for Halley's method in 1769. England sent Capt. Cook to Otaheite, and observations were made in Europe, North America, China and the East Indies; the result was better, but still unsatisfactory, varying from 8.43 to 8.85 seconds. Various estimates were deduced from these before the transit of 1874. Great preparations were made for this event, and the Americans and Europeans got ready (very different) apparatus for photographing the transit. Nearly every civilized government took part, and the weather was fine, but the contact observations were found to be little better than those of the 17th century. The resulting parallax depended to some extent on the computer's guess-work. The British photographs were admitted to be a failure. The Americans had a photographic image of the sun 4.4 inches in diameter. A mistake in using too large a micro-scope being corrected, those pictures taken between second and third contact showing the whole sun were of great value. Before the connection was made the European astronomers in congress at Paris, to prepare for the 1882 transit, declared photography a failure. The Americans, all the same, put most of their trust in photography. Exaggerated ideas prevailed that the sun's distance could be settled by transits of Venus alone, but this is not so. However, the real reason for spending so much on transits of Venus is that they are so rare that it would be unpardonable to neglect any opportunity of observing them.

SECTION B.

HOW PHYSICAL LAWS SHOULD BE TAUGHT.

Section B met in the Presbyterian College at four o'clock. Vice-President T. C. Mendenhall after referring to the recent separation of the section from astronomy and mathematics, spoke of the necessity of spreading an elementary knowledge of physics among educated people in general. Nearly all investigators in America are instructors as well. The methods of instruction in physics have changed vastly in these ten years, but for want of concerted action the results have not been quite satisfactory. It has been some time ago recognized that physics should be part of a liberal education, and that laboratory methods should be used. Prof. Pickering at Boston, and then Prof Mayer at Hoboken, early established such laboratories, and these are now many. Out of nearly four hundred universities and colleges, agricultural and scientific schools in the United States, in which physics was taught, 33 give instruction in courses more than elementary in their character. In chemistry, however, at least 150 give laboratory instruction. The first cost of a physics laboratory is of course great. As to how much time should be spent in the laboratory—the principle, a correct one, has come into force, that the student should not study nature so much in books as by his own investigation. It is not proper to give a student some simple apparatus, and expect him to re discover truths which had so many difficulties in days gone by; he learned nothing by it. He should arm himself with mathematics and a good text-book to begin with. Those who think experiment alone should be used, point to Faraday; but that of which Faraday was ignorant was only the outward conventional symbols of mathematical reasoning. It is also going to an extreme to say that success in physics depends on mathematical attainments. Mr. G. H. Darwin, an examiner in the greatest of all schools of mathematics, says that men should read less and master more. After a preliminary training in pure mathematics, experiments and mathematical study should go on together. As to what should be the nature of laboratory work—much is done that should not. Illustrative experiments should be left to the instructor. The student's experiments are not wanted to teach him the first principles of physics, but to train him in the methods used by physicists. The laboratory should have few and precisely accurate instruments, rather than many and inferior. The student should also consider what branch of physics he should take up. More regard should be paid to the quality than to the quantity of the laboratory work done. Physics are now taught in schools, but as the teachers are often ignorant of the subject the pupils receive errors hard to remove afterward. It is suggested that the committee to report on the best method of science teaching in public schools should work with the National Educational Association. It is for the section to say whether it can do anything toward the needed improvement.

SECTION C.

CHEMISTRY.

This section met at 2.30, when the Vice-President's address was delivered. Dr. Carrington Bolton remarked: The recognition by the Association of the equal rights of chemical science and the elevation of the late "permanent sub-section" to the dignity of a "section of chemistry," now assembled for the first time, mark an important epoch in the annals of our organization. Permit me to offer congratulations on our promotion, and to express my high appreciation of the honor of presiding over your deliberations. The permanent sub-section of chemistry was organized at the Hartford meeting of the Association in 1874. It had its origin in the action of a number of chemists assembled in Northumberland in August of the same year to commemorate Priestly's discovery of oxygen. At that memorable gathering a discussion of the advantages of forming an independent organization in the interests of chemistry led to the appointment of a committee to co-operate with the A.A.A.S. at their next meeting. The committee consisted of Professors Silliman, Smith, Hersford, Hunt, and Bolton. This was done to the end of establishing a chemical section on a firmer basis. This committee met at Hartford a few weeks later and united with the chemical members of the association in forming a permanent subsection in accordance with the provision of the new constitution adopted at the same meeting. Meetings of the subsections were held in ten days and arrangements were made for its permanent organization. In the following year the Association met at Detroit and the subsections reassembled under the chairmanship of Professor S. W. Johnson. Before adjourning the section elected Prof. Geo. F. Barker chairman for the ensuing year and passed a resolution requesting the chairman elect to prepare an address. This was the origin of the custom which it is very pleasant to follow."

Having thus given the introduction, Mr. Carrington reviewed Professor Barker's essay on the Atom and the Molecule, 1876; Professor F. W. Clark's, 1878; Ira Remsen, 1879, on Organic Chemistry; and Professor J. M. Ordway's Survey of Past Experience, Needs of Present and the Future of Chemistry. He, the speaker, invited their attention to chemical literature, which he sketched briefly in all its voluminous length and breadth. The earliest information concerning chemical arts came from the Egyptians, and of these papyri the most valuable was that discovered by Professor George Ebers at Thebes in 1872. It was the most ancient work extant, being assigned to the sixteenth century before Christ. The most ancient manuscript treating exclusively of chemistry was a Greek papyrus of Egyptian origin preserved in the library of the University of Leyden. Its authorship was unknown. It dealt with the purification of lead, of tin and of copper, &c., dealt a little with alchemy, though some of the receipts evidently refer to transmutations. Reference by the unknown writer was made to Dioscorides, who preceded him by two centuries. The most celebrated of a class of alchemical manuscripts was attributed to Zosimus in one of his treatises on the hydrometer. Alchemy was by these writers called the sacred art. There was trace of systematic nomenclature in those days. The Chinese, the Arabians, then the English in the middle ages, and so through the whole domain of science the speaker traced the writers of chemistry. He recommended a compilation of special indexes of these works, and at the conclusion of his paper a committee was appointed to work with that end in view. Dr. Bolton was loudly applauded and received the thanks of the interested listeners.

SECTION D.

MECHANICAL SCIENCE.

Professor John Trowbridge, of Harvard University, delivered an address on "The Importance of Experimental Research in Mechanical Science," in the section of mechanical science. He said that it might be considered as an abstract science having for its foundations only a few simple axioms and theories and diverted of all complications. The continuous discussion which had marked its growth had cleared away and left at the present, a clear, well-defined science, treating of the forms of nature and the movements they produce, or are capable of producing in order any phenomenon of motion. Even the last great extension of this science in the development of the true theory of heat had now become universally accepted. No anticipation now lay before them; there were no controversies to stimulate investigation as marked the last century. But while they had a science so comprehensive and exact there was still a great field open for experimental research. This is an era of applied science—an epoch that has already produced astounding results. There is a wide range of application of mechanical science to engineering and the arts for which experimental research is now demanded. The influence of experimental research in building up the science of pure mathematics shows the impossibility of progress without direct reference of probable laws to the test of experiment. Other subjects on which further research are desirable readily present themselves—the flow of air and steam through pipes and conduits, the importance of which in connection with sanitary appliances was becoming greater every day.

SECTION E.

GEOGRAPHY AND GEOLOGY—TOPOGRAPHY OF THE ROCKIES AND SIERRAS.

The Vice-President, Prof. E. T. Cox, of San Francisco, stated that he had found it impossible to prepare such an address as he had wished to do. He had, at the suggestion of some of the members of the section, determined to lay before them a few notes of a trip through the States and on the Pacific Slope. In passing from the East to the Pacific States and Territories, the lecturer continued, one is struck with the topography of the country through which the Rocky and Sierra mountain chains pass. The great plains, mensas and round and jagged peaks are the result of a peculiar mineralogical character of the geological formations. As a rule the crystallized rocks are and have been for many ages undergoing a rapid decomposition due to atmospheric causes. They are often capped by trachitic deposits and basalt of great thickness. Here and there may be seen great beds of stratified secondary rock, which are also easily weathered and crumble into dust, but often show a deeply exposed mineral front. During the period of continental uplift and before its close the Sierras and Rockies were much higher than at the present time, and he had no doubt that for some period during their early existence, the process of destruction was greatly augmented by the grinding force of great glaciers. All along the southern portions of the Sierras, the denudation has been so pronounced that the chain has been broken into short ranges that seem to rise from the midst of a level plain. These plains are not strictly level but rise regularly from a moderate valley to the level of the mountains. They have been made by disintegration of the mountains, the wearing down of their peaks and sides and the *debris* is moved to a lower level by the rains. This process is both mechanical and chemical. This especially applies to Arizona and Sonora, Mexico, the region of terrific rainstorms, which strew the coarser rocks down the mountain sides and sifts out the *debris* finer and finer as you approach the valley, thus assorting and arranging the disintegral material along the slopes in the order of its gravity. While no evidence of glaciation can be recognized now, it is nevertheless probable that glaciers existed at a much earlier period. After describing the general mineralogical features of the region under consideration, the learned lecturer concluded by describing the source and occurrence of the gold in the gold fields along the western slope of the Sierras in California. At the close of the epoch which elevated this portion of North America above the ocean, the elevation then attained must have been much greater than we see at the present, and in ages past must have been covered with snow and ice, which gave rise to glaciers, and the process of grinding down and levelling was being carried on more rapidly than in subsequent time. The glacier finally ceased when the cutting down left the mountain peaks no longer within the region of perpetual snow and ice, and all traces of glaciation may have been obliterated by the subsequent milder abrading force of nature and atmospheric erosion. These powerful forces that cut down the mountains also cut away portions of the gold-bearing quartz lodes and distributed the *debris* containing the gold along a broad area near the base of the mountains and in narrower channels as you recede from the base. This condition of things was brought to a close by volcanic eruptions which covered the gold bearing *debris* to a great depth with scoria and lava. Following the volcanic action we have a renewal of the erosive force of water, which, to some extent, followed the depressions which had been previously formed, but in many places cut across the old gold channels, and it is in the bars along these pliocene rivers that gold is found. In other words, I do not believe that the present rivers are on the raised beds of the pre pliocene rivers. As in the case of rock *debris*, the nearer we approach the foot of the mountain the coarser the gold, and as you recede it becomes finer and finer in texture.

SECTION F.

THE SHELLS OF AMERICA—A GREAT STUDY.

Prof. Wm. H. Dall gave the Vice-Presidential address at four o'clock in section F. Reviewing the progress of knowledge of the American mollusks, he said that at first this was an æsthetic study, caused by the beautiful shells. The first scientific article on shells in America was published by Thomas Say in 1816. At present the molluscan inhabitants of land and fresh water shells in America are very well known, though something has yet to be done in the South. The marine mollusca of the American and Canadian coast north of the Chesapeake has been worked out, also the Western coast from California to Sitka; and there is much unpublished information of the Alaskan coast. There is great room for discovery in the Gulf of California and from Georgia, round Florida, to Galveston, Texas. The geographical distribution of mollusks is a deeply interesting subject; one question is the identity of a group of living mollusks in Lake Baikal, in Asia, with the fossil *Trygonia* of the Colorado basin. Deep sea explorations have recently been made, exploding the idea that animals extinct in other places would be found there. A study of deep sea fauna may solve the question whether our coast fauna originated where they are now found. The anatomy of shell fish has been a neglected field of study here so far, and also their mental phenomena. Mr. Dall's observations point to a certain *Helix* having the power of distinguishing sounds. As to whether natural selection took place among these lowest animals, the lower the organism the greater the difficulty of proof, and in the lowest the difficulty is the insuperable; though the key to the great problem of systematic diversity of life, if found at all, is to be found among the lowest organisms. It is not so much a mystery how species began to vary as it is how they kept so much in ruts, so to speak. Selection is most shown where the mollusks have highly organized enemies,—mollusks in sandy regions have a grey color to hide them from the birds. The wonderful beauties of shells are a mystery, as no use can be conceived for them. A family of *trochus* have the habit of attaching stones all round them, hiding and protecting their shells. These things show what an immense amount of truth has yet to be found.

SECTION G.

HISTOLOGY AND MICROSCOPY.

This section was called to order at 2.30 by the Vice-President, Professor A. H. Tuttle, who immediately afterward read his address. He began by describing the progress the section of Histology and Microscopy had made since its inception in 1869, when microscopy was almost in its infancy. Much excellent research had been carried on before that date, but the microscope was comparatively little used. In those days if one wanted a microscope he had to hunt for it, and having found it, to pay for it, but now a scientific man with less than four or five of these instruments hardly considers himself worthy of the name. With the increase of the demand there has been an enormous increase of manufacture. Competition has also improved the quality and lessened the price, and the beginner of to-day has thus an inestimable advantage over the tyro of a few years ago. The vastly increased interest in microscopical work is largely attributable to the advances in biological science, but the yearly meetings of the sub-sections of the Association have also been of untold benefit. Now the status of the section is assured. There have been those who object to the study being raised to the dignity of a science, as has been done at this session, but all must admit that no instrument of research has attained such a high degree of developement as the microscope, and this necessitates a corresponding increase of discipline among those who use it as a medium of scientific investigation. He himself had been among those who questioned the advisability of placing microscopy on an independent footing as a sub-section. The Standing Committee, however, considering that microscopy only as a means of scientific research and not as an amusement, had determined to do so, however, and it had consequently been raised to the position of a sub-section in connection with histology. As regards the relation between histology and microscopy it is closer than appears at first. Histology might well be promoted to the dignity of a science itself, not only from its morphological but its physiological character.

All papers and discussions calculated to help the scientific world to better microscopes and improved methods of using them, would be welcomed, and in conclusion he hoped that this sub-section would come to be considered as the representative of the world of histological and microscopical research.

SECTION H.

ANTHROPOLOGY.

The section of anthropology was opened by a paper from the Vice-President, Prof. Daniel Wilson, of Toronto University, who is absent in Europe. It was read by the Secretary, Prof. Otis T. Mason, of Washington. The writer devoted his attention specially to some Physical characteristics of Native Tribes of Canada, particularly to the significance of certain typical head-forms, and their bearing in reference to the origin, distribution and classification of races. In these researches it was important to keep in view the prevalence throughout America of various artificial modifications of skull-forms. To all appearances the Peruvians and Mexicans had developed independent phases of progress in arts, science and social policy, without any knowledge of each other. Artificial cranial deformation, however, was no peculiarity of the American continent, either in ancient or modern times, and he cited examples of mediæval compressed crania, which attracted special attention in Europe. These seemingly belonged to the nomad Mongols and Ugrians of the steppes of Northern Asia. The native races of the Dominion, and especially the earliest known aborigines of Upper and Lower Canada, appear to have been all of the same dalichocephalic type, and to have formed a class distinct from the short, or globular headed races of the south, whose head form was long regarded as typical of the whole American race. He referred to the rudiments of civilization which had been found at Hochelaga and about the Montreal mountain, and said that to all appearances, through unnumbered centuries, the tide of human life had ebbed and flowed to the north of the great lakes, and in the valley of the St. Lawrence, as unprogressively as on the great steppes of Asia. The tribes of our Canadian forests present much in common with those by whom the whole area of this northern continent, southward of the gulf of Mexico, appears to have been occupied when first brought under the notice of European explorers. How ever remotely we may trace our way back to unrecorded centuries, ere we reach the time when man made his first appearance here, it is recent when compared with the peopling of the ancient world. An approximate correspondence in ethnical characteristics is common to many tribes both of North and South America. But the types were here hemmed in between the Atlantic and the Pacific, and extreme diversities have been modified. He referred to typical Canadian skulls, those of the Hurons around Georgian Bay having a special value. Of the known races of the New World, the Esquimo alone presented at first a seemingly marked diversity from the other aborigines. The evidence which the mediæval European examples of cranial deformation supply, suggests the origin of this barbarous practice in an aim at conformity with the natural head-form of a patrician or conquering race.

SECTION I.

ECONOMIC SCIENCE AND STATISTICS.

This section opened at half-past two o'clock this afternoon, the Vice-President, E. B. Elliott, of the Treasury Department, Washington, in the chair.

The Vice-President gave his address, selecting as his subject, the scope and limits of the section. In 1857, when the Science Association met in Montreal, a committee was appointed to report upon the various systems of vital statistics existing in the various states of the Union. That Committee reported at the last meeting of the Association before the late war. Legislation had been invoked in Congress to secure complete and uniform statistics, and ere long the desired legislation would be secured. A few days ago he had an interview with the chief of the Cherokee nation from whom he learned that it was quite possible we might have life and annuity tables of that tribe, even before we got them from the great State of New York. The British Association, after which this was patterned, was organized in 1831, and the section of economic science and statistics was not organized until 1856, at which time he presented a paper on the mortality rate of Prussia. With us the present section was established in 1881, and the present year is the first one in which it begins active operations. Economic science pertains to man in his domestic and social relations, as well as his surroundings. The section is not speculative, but deals with known facts related and reduced to order. It is knowledge reduced to order. The subjects to be submitted to this section might pertain to other subjects in so far as the facts were susceptible of being tabulated and systematized, as, for example, life statistics and annuity tables. The mathematic doctrine of probabilities comes within its domain, and it may be desirable hereafter to form a sub-section exclusively charged with this subject. A French savant, Quetelet, had been instrumental in forming such a section in the European Association.

Among the special subjects properly belonging to this section, is standard time. It is only of late years that man may be considered as a migratory animal, and hence he needs a system of time which will serve him in various regions of the earth. At present there are no less than seventy different standards of time in use by the various railways companies, all of which are capable of being reduced to two or three correlated standards. The changes brought about by the meteorological and electrical sciences belong to this section; also the question of finance, including the changing values of U.S. securities, British Consols, French *emprunts*, &c. The divisions of time also come into this section. The change from the Julian to the Gregorian time, while it made our year measure nearly complete, left our monthly, weekly and daily times very imperfect. These subjects were among those which might properly be considered in this section.

The learned President then declared the meeting closed.

THE RETIRING PRESIDENT'S ADDRESS—THE MINERAL WEALTH OF AMERICA.

GREAT GATHERING IN THE QUEEN'S HALL—BRILLIANT RECEPTION IN THE ASSEMBLY ROOMS—SCIENCE AND BEAUTY ARM IN ARM.

Wednesday evening was the time fixed for the address of the President who has just completed his term of office, and the attendance of members and others was very large, the ladies being present in strong force. The hall was beautifully decorated with the Union Jack, the Stars and Stripes, the Red, White and Blue, and the green flag of Old Ireland. Principal Dawson, the President, occupied the chair, and introduced his predecessor, Prof. G. J. Brush, of Yale College, New Haven, Conn. Among the principal members of the Association upon the platform were Professors Mendenhall, Tuttle, Bolton, Cox, Dall, Hough and Saunders. Prof. Brush said:

Mr. President, and Fellow Members of the American Association for the Advancement of Science:

The change in the Constitution effected at our last meeting, extending the scope of the Association and dividing it into nine sections, each with a Vice-President, whose duty it is to deliver an address to the section over which he presides, has relieved the retiring President from attempting a general review of the progress of science during the past year. I turn, therefore, to a more special subject, and invite your attention this evening to a sketch of the progress of American Mineralogy, since the commencement of this century, with particular reference to the labors of some of the early workers in the science on this continent. As the first distinct beginning of the science, I may mention an association formed in 1798 in the city of New York, which assumed, as they expressed it, "the name and style of the American Mineralogical Society." It announced as its object "the investigation of the mineral and fossil bodies which compose the fabric of the globe, and more especially for the natural and chemical history of the minerals and fossils of the United States." The distinguished Dr. Samuel Latham Mitchill, who seems to have been a man of universal genius, was at once its first President, its librarian, and its cabinet-keeper. The committee of the society issued a circular in which, while expressing themselves, "desirous of obtaining and diffusing by every means in their power a correct and extensive knowledge of the mineral treasures of their country, they earnestly solicited their fellow-citizens to communicate to them on all mineralogical subjects, but especially on the following, viz:

"1. Concerning the stones suitable to be manufactured into gun-flints: where are they found? and in what quantity? 2. Concerning native brimstone or sulphur or the waters or minerals whence it may be extracted? 3. Concerning saltpetre: where (if at all) found native? or the soils which produce it in the United States? 4. Concerning mines and ores of lead: in what places? the situation? how wide the vein? in what kind of rock it is bedded."

This warlike demand seems to call more for the discovery of the materials for national defence than for the advancement of science, and besides being a commentary on the spirit of the times, gives a rather humorous impression of their strangely inadequate conception of the science of mineralogy, and its possible bearings on practical life. But in justice to them I should add that it is further announced that "specimens of ores, metals, coals, spars, gypsums, crystals, petrifications, stones, earths, slates, clays, chalks, limestones, marbles, and every fossil substance that may be discovered or fall in the way of a traveller, which can throw light on the mineralogical history of America, will be examined and analyzed without cost, sufficient pieces, with the owner's leave, being reserved for placing in the society's collection." I have quoted the circular almost verbatim to give you some idea of the genuine though crude longings for knowledge felt by our early mineralogists, and also of the generous spirit in which they worked. Such then, was the state of knowledge in mineralogy here at the commencement of the century. A few American minerals, collected by travellers from time to time, had before this been taken to Europe for identification, but among these were discovered only two minerals new to science. The Moravian missionaries found at St. Paul, in Labrador, the beautiful species of feldspar called by Werner *labradorstein*, which in more modern times we know under the name of *labradorite*. Klaproth, the most eminent analytical chemist of his time, discovered that the so called fibrous barytes from Pennsylvania was the sulphate of the then newly-discovered earth strontia. He thus, for the first time, identified the mineral species *celestite* which was subsequently found in various localities in Europe.

I have thought it would be well for us to recall briefly something of the character of these men and their labors for the advancement of mineralogy in this country. First among these I will mention Dr. Archibald Bruce. He was the son of Dr. William Bruce, a surgeon in the British army, and was born in New York in 1777. He was graduated at Columbia College, subsequently studied medicine, and in 1798 went to Edinburgh, where, in 1800, he obtained his doctor's degree from that university. He established the first purely scientific periodical ever published in America. This was called the *American Mineralogical Journal*, and the first number of it was published in 1810. This journal contained several important papers by Dr. Bruce, among them, the investigation and description of two new mineral species, the native magnesia of Hoboken and the red zinc oxide of Sussex Co., New Jersey. These are the first American specimens described by an American mineralogist. So thoroughly was the work done by Bruce, that these species remain to-day essentially as he described them, and his papers may well be studied by mineralogists now as models of accuracy. It was a great loss to science and to his country that so able an investigator should have been cut off at the early age of 42. He died in New York, Feb. 24, 1818.

In 1805 Colonel George Gibbs of Rhode Isld., for many years a resident in Europe, returned from his travels with a collection of minerals the most extensive and valuable ever brought to America. Colonel Gibbs was a zealous cultivator of mineralogy, and, fortunately for science, a young man of wealth. He used his money freely for the purchase of whole cabinets, as well as in personal explorations in search for minerals. Colonel Gibbs, however, did not confine himself to the collection of minerals in Europe. On his return to this country he made extensive journeys and opened up new mineral localities, giving his time and specimens freely to aid others who were interested in this special study. At Yale, as an incentive to students, he for many years offered prizes for superiority of attainments in mineralogical knowledge and for services rendered to the science by useful discoveries and observations. He published valuable papers both in the *American Mineralogical Journal* and the *American Journal of Science*, and did much by his counsel and co-operation to support these publications. Indeed, it was from Colonel Gibbs that Professor Silliman first received the suggestion that he should institute a new journal of science, in order that the advantages already gained by the short-lived mineralogical journal might be secured and further progress for science might be made. In every way Colonel Gibbs proved himself a liberal patron of science, and it was most fortunate for the promotion of mineralogy in this country that he should so unselfishly have devoted his wealth and his personal influence to its advancement. He died August 5, 1833, aged 57.

Much as had been accomplished by the free exhibition of cabinets and the explorations and investigations of enthusiastic workers in mineralogy during the years from 1805 to 1815, a great drawback was now felt to the progress of the science from the want of text books. Most of the literature of the subject was in German and French, but the works of the French and German authors had not then been translated and consequently were accessible only to the few who were acquainted with these languages. In English there were not many treatises on the subject. That, by Richard Kirwan, the eminent Irish mineralogist of the last century, was a renowned work in its day, but, as the last edition of it had been published in 1794, it was already too old to be of much service to the student. Jameson's treatise was somewhat more recent (1804), but its great fulness and exclusive devotion to the Wernerian system made it an undesirable book for beginners, aside from the fact that its price was such that few students in those days could afford to buy it. So much progress had been made at home and abroad, that a work was needed here which should include the modern discoveries, and one also which should gather up the scattered facts already published in regard to American minerals. Fortunately for the further progress of science in this country this was done by Professor Parker Cleaveland. His work was published in 1816, and was entitled "An Elementary Treatise on Mineralogy and Geology." Professor Cleaveland was professor of mathematics and natural philosophy in Bowdoin College, and like many other professors of science in the early history of American colleges was charged by the trustees to lecture also on mineralogy and chemistry. He was an enthusiastic student of mineralogy, was well acquainted with the literature of the science in various languages had been a successful teacher of the subject for many years, and withal was both an explorer and investigator, and held intimate relations with the leading mineralogists of the day. The first edition was soon exhausted and a new and revised edition with more than a hundred pages of new matter was published in 1822. The demand was so great that this likewise was soon out of print and a third edition was called for by the public, but Professor Cleaveland had about this time become so engrossed in the administration of the affairs of the new Medical School at Brunswick that he was unable to respond to the call, having turned his thoughts and efforts in new directions. Unfortunately for the science of mineralogy, in which he had obtained such eminence as an author and teacher, he no longer contributed actively to its progress, although he continued his work as lecturer on the science so long as he lived. He died October 16th, 1859, in the seventy-ninth year of his age.

The last to be mentioned of these early leaders is Professor Benjamin Silliman. His name is so intimately associated with the progress of science on this continent during the first half of the present century, that his life work is more or less familiar to all. But the important service he rendered in the early history of mineralogy deserves especial recognition here, not only for the work he himself did in the laboratory and the field, but because his enthusiasm and zeal were a constant inspiration to others. After speaking of Mr. Sillimhn's various works, he said: The establishment of the *American Journal of Science* in 1818, now everywhere recognized as of inestimable value to all departments of science, was peculiarly helpful to mineralogy, and the early volumes are rich in articles on this subject. Professor Silliman's original contributions to science were more in chemistry and geology, but he also is the author of several important papers on mineralogy, and was the discoverer of the occurrence of native tungstic acid as a mineral species. For more than fifty years he continued as teacher in Yale College, and when he resigned his professorship, in 1853, he had the satisfaction to have as his successor in the department of mineralogy and geology Professor James D. Dana, who was already among the foremost mineralogists of the day, and whose published works, before and since his accession to this professorship, have done so much for the advancement of mineralogy. Professor Silliman retired from his active labors in his seventy-fourth year, still in full possession of his remarkable physical and mental powers, and lived honored and revered until November 24, 1864, when he passed to his rest.

It will be inferred from what has been said of these pioneers that the developments and discoveries of minerals, during the first twenty-five years of the century, were due entirely to individual enthusiasm and private enterprise. Up to this time no aid had been received from either State or National governments, and in looking over the work accomplished during this period we are filled with wonder and admiration at the energy and rare devotion to science exhibited. The larger portion of the continent was an unbroken wilderness, and the facilities of communication even in the settled parts of the country were of the most primitive character. Yet at the present day, with our means of rapid transportation, many naturalists would hesitate to undertake the long journeys then made for purely scientific purposes. Geologists as well as mineralogists will recall how much science is indebted to such men as William Maclure, James Pierce, Thomas Nuttall (the botanist), and others who made extensive trips through the whole territory east and in some instances to the west of the Mississippi River. It may be interesting here, in these days of Summer Schools, to recall, although parenthetically, that what was probably the first Summer School of Science in the United States was established more than fifty years ago in connection with this institution. The school consisted of a flotilla of towed canal boats, and the route was from Troy to Lake Erie. It took two months for the trip, and visited all important points on the way. Instruction by lectures and examinations was given in Mineralogy, Geology, Botany, Zoology, Chemistry, Experimental Philosophy and Practical Mathematics, particularly Land Surveying, Harbor Surveying and Engineering. One of the largest boats in the flotilla was fitted up as a laboratory, with cabinets in mineralogy and geology, and also scientific books for reference. Students were taught the method of procuring specimens, and were required to make collections of whatever was interesting on the route. The public mind was finally awakened to the importance of the work which these explorers and investigators had carried on single-handed. Government now came to the aid of Science. In 1824 one State legislature, that of North Carolina, authorized a geological survey to be made. This example was followed in 1830 by Massachusetts, and soon after by New York, Pennsylvania, Virginia and other States, and also by the national government, until, as is now well known, the whole territory of the United States and Canada either has been or is in the process of being surveyed.

It was thought by many scientists in the first half of this century that our rocks seemed likely to afford less variety of mineral contents than the rocks of Europe. Further study, however, and more careful and extended observations encourage us to believe that our mineral riches, even in variety of species, will compare favorably with those of other continents. Already fully one-half of the known mineral species have been found here. The present number of known minerals is variously estimated to be from seven hundred to one thousand. There have been described, as occurring here, nearly three hundred supposed new American minerals. Of these, perhaps one-quarter are new to science and the remainder have either been proved to be identical with species already described, or their characters are so imperfectly given that further investigation is needed to ascertain what they are. Among these new minerals are some of great interest of science. The ambition to make new species is recognized as a drawback in every department of science, and mineralogy has probably not suffered in this respect more than other sciences. Nor do I believe that American mineralogists have, as a class, been less careful in describing new species than their European confrères. There have been flagrant examples of carelessness in both hemispheres, and the growing tendency during the last ten or fifteen years to call things new which have been only imperfectly investigated cannot be too strongly censured. "If two very simple rules," says a recent writer, "could be conscientiously followed by those investigating supposed new mineral species, the science of mineralogy would be vastly benefited. These are: first, that the material analyzed should in every case be proved by a careful microscopical and chemical examination to be homogenous; and second, that the thorough investigation which is to establish the position of a 'new species' should precede, not follow, the giving of a new name. A mineral which can only be partially described does not deserve a name." In comparing the minerals found in America with those of Europe, although interesting minor variations are observed, it can hardly be expected that very marked differences should exist. This is, of course, due to the fact, that in the inorganic kingdom, nature has every-where to do with the same elements, under essentially like conditions. A large number of remarkable analogies between the minerals of the two continents will occur to any one familiar with the subject, as, for example, the character of the occurrence of individual minerals in the rocks of the north-eastern United States and Canada as compared with those of Norway and Sweden, and numberless instances of like association of minerals in various parts of Europe find their counterparts here. A marked feature of American minerals is the grand scale upon which crystallization has taken place, individual crystals of large size being very common. The granite veins of New England afford striking examples of this kind. We have common mica, in sheets a yard across; feldspar has been observed where a single cleavage plane measured ten feet: gigantic hexagonal prisms of beryl, four feet long and more than two feet in diameter, and weighing over two tons, have been described; spodumene crystals six to seven feet in length and a foot or more across, and masses of rock crystal of immense size have been found. Canada and New York have given crystals of apatite, phlogopite and sphene which for these species are of marvellous grandeur in dimensions. Many other American localities might be mentioned where giant crystals occur. While it is true that these are extraordinary instances it is also true as a general fact common to a very large proportion of the minerals found in this country that the species occur in much larger crystals than those obtained from European localities. Another point worthy of note is the occurrence in comparatively large quantities, and over wide areas, of some of the rarer elements as constituents of the minerals found. In illustration of this we have, among the rare earths, *glucina* combined with silica and alumina in the mineral *beryl*, occurring in large quantity, and perhaps in a hundred or more places; *zirconia*, in the mineral *zircon*, is also very widespread in its range of occurrence as an original constituent of the older rocks, as well as a vein mineral; localities are known which have furnished this rare species by the hundredweight. The *cerium* earths are found largely in the mineral *allanite*, which occurs in so many places that it may be said to be a common mineral in the United States. These earths are also found in the rare phosphate *monazite*, a mineral that in America has a wide range of localities, and recently this species has been found in crystals of two, three, and, in one instance, of eight pounds in weight. Again, three new earth metals, *mosandrum*, *phillipium* and *decipium* have been described as occurring with the cerium earths and yttria in the North Carolina *samarskite*. The rare alkali metal *lithium*, sometimes associated with the still rarer metals *rubidium* and *caesium*, is found not only of widespread occurrence in our lithia micas, but the mineral *spodumene*, containing from five to eight percent of lithia, occurs by the ton in at least one locality and must be looked upon as one of

the common American minerals, being found in the granite veins in Maine, New Hampshire, Massachusetts and Connecticut, and as far south as North Carolina and Georgia. Lithia also is one of the constituents of the phosphate *triphilite*, and there are several localities known where this mineral occurs abundantly. Again, we have the frequent occurrence of some of the rare metals which form metallic acids: *Columbium*, the first metal, new to science, discovered in America, associated with its twin metal *tantalum*, is found in columbite in our granite veins from Maine to Georgia, a range of more than a thousand miles, in a score or more of places, and sometimes is obtained by the hundred weight at a single locality. The American variety of *samarskite*, another rare columbate has also been found in masses of fifty pounds or more in weight, and these acids occur in still other American species. *Molybdenum*, both as sulphide and in the oxydized form as native molybdic acid and molybdate of lead, is found in many localities, and occasionally in large quantity. Quite recently *vanadium* compounds have been discovered in several places, and *tungstates* have also been observed over a wide range of country. *Titanium* has been found in enormous quantities in extensive deposits of titanic iron as well as in the form of rutile and in sphene. The rare metal *tellurium* occurs native in Colorado in one locality where single masses of twenty-five pounds in weight have been taken out, and several new tellurium compounds have been found in our western mines. It is, perhaps, unnecessary to enumerate more fully the many occurrences of other rare elements in American minerals. Enough has already been said to show that important developments have been made in the discovery and investigation of the minerals found in our American rocks during the past eighty years. Nevertheless it is but a commencement in the work. Only a very small portion of our territory has been explored with any thoroughness, and none of it exhaustively. The enormous production of the precious metals, and the extensive deposits of ores of the more common metals which have been opened up during the past twenty or thirty year, have placed us in the front rank as metal producers, but we are still far behind Europe in the variety of minerals obtained from our mines. This may be due, in some instances, to the character of the veins or ore deposits, there being, as in many of our gold and silver mines, remarkably few associated minerals. In other cases, however, it is doubtless due to the fact that very few persons connected with our mines have even an elementary knowledge of the rudiments of mineralogy, while in continental Europe almost every mining officer is familiar with all the ordinary minerals. Thanks to the training of our schools of science, an improvement in this respect is already noticeable, as is shown in the discoveries made in the mines of our western states and territories during the past few years. While the service done for mineralogy by our geological surveys is gratefully acknowledged, we feel we have a right to demand much more from them in the future. Mineralogy has been too largely looked upon as a guide to the discovery of useful ores and minerals and not as a matter for scientific study; fortunately during the past decade the discoveries in optical mineralogy, and their importance in the determination of the constituent minerals of the crystalline rocks, have led many geologists to again recognize the desirability of a knowledge of our science. Much will be accomplished if those in charge of geological surveys will direct competent persons to make observations, not only on the main mineral constituents of rocks but also on the manner of occurrence of individual minerals. The careful inspection of quarries and mines is greatly to be desired. These are rich sources for minerals, but unless constant watchfulness is exercised valuable material for science is in danger of being buried out of sight. It is too true that many of the most interesting discoveries already recorded seem to have been due more to the result of fortunate accident than of systematic and intelligent exploration. If our trained mineralogists, instead of devoting most of their attention to the examination of specimens in cabinets collected by others, would give more time to personal observation in the field in the study of the order and manner of occurrence of mineral species in place, our knowledge would doubtless be greatly promoted. Again, if our wealthy amateurs could be induced to spend their money as freely in the exploration of promising American localities as in the importation of costly European specimens, we might hope for many important discoveries, and they could have the satisfaction not only of gaining novelties for their collections, but incidentally they would do much to foster science. In order to keep pace with the progress of the science, we need many more workers who will devote themselves especially to mineralogical research, and we need more of the spirit of the early workers. It is my belief that the number of persons at present interested in the study here, either as amateurs or investigators is relatively less than in 1825. The mineralogy of to-day is a very different subject from the mineralogy of the commencement of the period over which we have so hastily glanced. Then the study of minerals was confined almost exclusively to their external characters. Led by Werner, and reinforced by his most gifted pupil Mohs, the majority of mineralogists claimed mineralogy to be a purely natural history science. They gave their attention, as has been well said, entirely to "how the mineral looked," and not at all to "what it was." On the other hand the development of analytical chemistry by the labors of Klaproth and Berzelius led many to take up mineralogy from a purely chemical stand-point. These two schools working independently brought great confusion into the science. The discoveries of Haüy in crystallography and especially his labors in establishing a mathematical foundation for the geometrical form of crystals, and the recognition that the constancy of form depended on the constancy of the "integrant molecule," were steps which paved the way for modern mineralogy. In this a union of all the physical, geometrical and chemical properties is required in order to determine the true character of a mineral. Further, we are called upon to investigate the history of its origin, its relation to associated species, the changes which it undergoes, and the causes and results of these changes. Here we have to do largely with both geology and chemistry. From this it becomes evident that a much broader foundation is now required for the mineralogist than in the early days of the century. The bearing of physics, geology and chemistry in the study of the mineral kingdom must be thoroughly recognized and appreciated by every investigator who desires to contribute to further progress. No mineralogist can expect to have a profound knowledge in all these directions, but he must be at least capable of intelligently applying to his subject the results obtained by experts in these sciences. Mineralogy is deeply indebted to special investigators in all these departments. Without their cooperation it would have been impossible to discover the relations of form and other physical characters with that fundamental arrangement of molecules whose nature it is now admitted controls all the properties of a substance. The study of natural crystals has yielded rich material for the physicist. In the department of optics it has given results from which many fundamental laws have been deduced; and natural crystals, too, have furnished, in many cases, the very apparatus which made investigations possible. Some chemists claim that mineralogy is not at all a science by itself, and constitutes only a small part of inorganic chemistry. It can be unquestionably conceded that a knowledge of chemistry is fundamental, and in consequence this claim has a certain plausibility. On the other hand, we contend that it was largely the labors of the mineralogists on the physical characters of minerals, and especially their demonstration of the relation of form to chemical composition which finally awakened chemists to a more profound study of their own subject. The law of isomorphism was discovered by a chemist, whose training as an expert crystallographer in the examination of natural crystals made it possible for him to recognize the wonderful relation of form to composition. Dimorphism was first established from observations made on minerals, and it is in the study of the mineral kingdom that the laws of isomorphism and dimorphism find abundant demonstration. From the further investigation of the chemical nature of minerals we may hope for new light on the molecular constitution of substances which as yet the chemist has been unable to reproduce. We have already indicated the interdependence of geology and mineralogy. May we not claim the same interdependence of mineralogy, physics and chemistry, letting each go on in its own sphere, contributing to the general progress, sure that every new fact observed and every new law discovered will be for the common advancement of all!

THE RECEPTION.

The reception of the Association by the Local Committee, which took place immediately after the address, was a most brilliant affair. The Assembly Rooms were decorated with flowers, and not least among the adornments were the many beautiful faces and bright dresses of the ladies who attended to relieve the almost oppressive mass of learning; scientists, indeed, in the presence of ladies become uncommonly like other people. The Local Committee are certainly to be congratulated on the great success of their arrangements.

Dr. Davies' organ recital was very highly appreciated and the strains of "God Save the Queen" were greeted in as loyal a manner as if the audience were one in the heart of the Empire instead of a gathering composed largely of other than British subjects and several thousand miles away.

Among the citizens present were:—Dr. T. Sterry Hunt, chairman of the local committee; Sir Francis Hincks, Principal Dawson, C.M.G., the Very Rev. Dean Baldwin, Rev. Dr. Stevenson, Rev. James Roy, Rev. Principal Henderson, Rev. R. Campbell, Hon. Judge Day, Dr. Hingston, Dr. R. P. Howard, Messrs. Hugh McLennan, Chas. Garth, G. A. Drummond, A. T. Drummond, John Stirling, J. J. Maclaren, Q.C., John Lovell, David Morrice, J. H. Joseph, Alexander Buntin, S. E. Dawson, Charles Morton, James Shearer, J. R. Dougall, H. S. Evans, J. H. R. Molson, George W. Stephens, M.P.P., T. James Claxton, W. N. Evans, H. R. Ives, A. M. F. Gianelli (Italian Consul), U. S. Consul-General Stearns, John Kennedy, G. B. Burland, Prof. Bovey, R. A. Ramsay, Thomas Workman, Dr. Scott, G. L. Marler, Dr. McConnell, R. W. McLachlan, Dr. William Gardner, Dr. W. G. Beers, Captain R. C. Adams, A. A. Ayer, James Morgan, Fred. Cole, Thomas Morgan, Joseph Bemrose, Dr. Girdwood, Dr. Turgeon, Dr. Trenholme, John Lewis, Richard White, Jas. Stewart, W. O'Brien, W. Taylor, Alds. Mooney and Kennedy. Of the European visitors, Dr. John Rae, Prof. Zabo, Dr. J. H. Gilbert, the Rev. Dr. Haughton and Dr. Kowalevsky were also present.

SECOND DAY—THURSDAY.

NEW MEMBERS ELECTED—COURTESIES EXTENDED.

The Association met in general session in the William Molson Hall at half-past ten in the morning, subsequent to the meeting of the General Committee at the Windsor.

Prof. SAUNDERS reported the following list of persons proposed as new members, who were duly elected:—

L. W. Holstein, Belvidere, N. J.; Henry F. Homes, Albany, N. Y.; Allen B. Howe, New Haven, Conn.; Edward Hungerford, Burlington, Vt.; Jos. P. Iddings, U. S. Geological Survey, Orange, N. J.; H. N. King, Stamford, Conn.; Dr. H. S. Lefforнan, Philadelphia; W. H. Lynch, Danville, Que.; J. R. Marble, Worcester, Mass.; J. M. McLarty, Boston; J. S. Clarke, Boston; J. J. Davis, M. D., Racine, Wis.; L. M. Dayton, Cincinnati, O.; Ed. Dummer, Boston, Mass.; H. L. Farr, Rutland, Vt.; Mrs. Marion Y. Fortescue, New York; Wm. L. Garrett, New York; T. W. Gleeson, Boston; Dr. R. P. Greenleaf, Henry Clay, P.O., Del.; T. A. Greene, Milwaukee, Wis.; Rev. C. Heine, Montreal; C. L. Herrick, Minneapolis, Min.; L. W. Andrews, Springfield, Mass.; Oscar Atwood, Rutland, Vt.; Prof. Brown Ayres, University of Louisiana, New Orleans; Thos. D. Bell, Montreal; Abraham D. Balen, Plainfield, N.J.; Lieut. Commander Royal B. Beadford, Torpedo Station, Newport, R.I.; Arthur Brown, Oakland, Cal.; F. G. Brown, Rutland, Vt.; John Bull, Washington; J. H. Burland, Montreal; L'Abbé Joseph Chabert, Montreal; Macgregor Mitcheson, Philadelphia; A. H. Moore, Magog, Que.; Miss Anna Morton, Chicago; O. D. Norton, M.D., Cincinnati, O.; Prof. D. B. Purinton, State University, Morgantown, W. Va.; Prof. C. H. Pettee, New Hampshire; Coll. of Agriculture, Hanover, N.H.; Dr. A. M. Phelps, Chateauguay, Que.; A. Proudfoot, M.D., Montreal; R. A. Ramsay, Montreal; Dr. S. P. Robins, Hochelaga, Quebec; J. W. Sanborn, Columbia, O.; Prof. M. P. Scott, Blacksburg, Va.; Prof. H. M. Seeley, Middlebury, Vt.; Capt. T. A. Selfridge, U. S. Navy Torpedo Station, Newport, R. I.; Wm. W. Share, Brooklyn, N. Y.; W. A. Silliman, Clarkson, N. Y.; Mrs. A. B. Smith, St. Albans, Vt.; H. E. Smith, Hartford, Conn.; Mrs. Ellen, M. P. Stone, Providence, R. I.; Henry Stone, New York; Rev. J. A. B. Stone, Detroit, Mich.; Prof. Wm. Strickley, Colorado College, Colorado Springs; Wm. A. Stiles, Deckertown, N. J.; Jos. Townsend, Durham, Ont.; James Troop, Lansing, Mich.; Mrs. Charlotte F. Wells, New York; John Wanless, M. D., Montreal.

The Montreal Athletic Association sent an invitation tendering the use of their club rooms, which invitation was accepted with thanks.

Prof. Putnam announced that the Standing Committee had passed upon 205 papers which would be read.

After a number of announcements by the General Secretary, the Association adjourned to meet in sections.

SECTION A.

THE DISTANCES OF THE STARS.

The section of mathematics and astronomy assembled at half-past two o'clock in the afternoon. In the absence of Vice-President Harkness, Prof. Rogers took the chair.

"Parallax of α Lyra and 61 Cygni," was the subject of a paper by Prof. Hall, which was read by Prof. Eastman. The paper is the elucidation of a system to determine the distance of stars from the earth. The paper first gives an account of the various works and discoveries with reference to the stellar parallax during the last two centuries. It was long ago pointed out by Galileo, that if two stars were near each other, one faint and the other bright, they were at different distances from us, and that differential observations of these stars would probably lead to a difference in their parallaxes. Herschel found that many such stars were in motion at varying distances from the earth, and that consequently no such method would serve. The present paper describes an attempt to find the parallax of the two stars, α Lyra and 61 Cygni, by the differential measure. The observations were carried on during portions of the years 1880 and 1881. The observations of α Lyra consisted of two series, one with a dark field and bright wires; those of 61 Cygni with a bright field and dark wires. Among the results shown by this method were the approximate facts that the distance of α Lyra from the earth is such that it requires 6,803 years for its light to reach the earth, while that of 61 Cygni requires 18.11 years.

Prof. C. A. YOUNG read a paper describing the new 23-inch equatorial recently erected in the Halstead Observatory, at Princeton, N.J., the most perfect telescope now in the United States, if not in the world.

ELLIPTIC FUNCTIONS.

Prof. W. W. JOHNSON, Professor of Mathematics, U.S. Naval Academy, read a paper on "Inverse Elliptic Functions and the Imaginary Period." The elliptic functions, su, u, cuu, du, u, with their reciprocals and ratios, constitute twelve elliptic functions, which, according to a ratio proposed by Mr. J. W. L. Glaisher, are denoted by su, ca, du, us, uc, ud, sc, sd, cs, cd, ds, dc. These may be regarded as the ratios of four quantities sc. du, of which only the ratios are dealt with in homogeneous equations. The derivatives of the functions are expressed in this notation, and from them are deduced the values of the inverse functions expressed as integrals. From the latter the usual expressions for the direct elliptic functions of an argument of the form iv, in terms of functions to the modulus k, are readily derived and these are used to deduce the imaginary period of the elliptic functions.

WAS NEWTON IN ERROR?

Prof. DE VOLSON WOOD, Hoboken, N.J., read a paper entitled "A correction in Newton's Principia in regard to the time of the approach of two spheres." Newton says that if two spheres of the same material of the earth, each one foot in diameter, be placed 12¼ inches from each other between their centres, in void space, they will be a month's time in coming together by their mutual attractions. Prof. De Volson Wood, in his investigations, finds the time to be less than 5½ minutes.

Dr. HAUGHTON asked where in the "Principia" this proposition of Newton's could be found?

Prof. WOOD replied that he believed it was on page 527.

Dr. HAUGHTON said that next to his Bible the book he most read was Newton's "Principia," and he never found such a proposition in it as that attributed to him. It was incredible that so accurate a mind as Newton's should have made such an error.

Prof. WOOD said he certainly found it in an edition of the "Principia," and had no doubt it was Newton's language.

Dr. JOHNSON, McGill College, said he could procure the book in five minutes, and went out to get it.

In a short time he returned with several volumes, which he placed in Dr. Haughton's hands.

Dr. HAUGHTON, after examining the books, said be had in his hands a Jesuit's edition of the Principia in two volumes. In the first volume the text was very accurately given, with some mistakes, and a large amount of foot notes. In the second volume—the work put into his hand was called—"A Treatise of the System of the World, by Sir Isaac Newton, translated to English,"—it does not say by whom. The book was a literary curiosity. On looking at the end of the book he found evidence that the book could not be Newton's whole production. It referred, among other things, to the tides on the coast of Japan, which could not have been Newton's remarks since, in his time, nothing was known of them in that region. It was full of facts and fancies which had never been heard of in Newton's time, and he felt abundantly justified in denying the genuineness of the book as a production of Sir Isaac Newton.

Prof. WOOD admitted that he found the mathematical error of which he had spoken in one of the volumes put into Dr. Haughton's hands, but when he first saw the error it was in a large edition of the works of Sir Isaac Newton, which included the smaller volume the genuineness of which Dr. Haughton had called in question. The book bore the title, "Treatise of a system of the world, by Sir Isaac Newton," and as it contained the Principia he never thought of doubting its genuineness.

THE DOCTRINE OF CHANCES.

Prof. T. C. MENDENHALL made a communication on "An Experimental Solution of a Problem in the Doctrine of Chances." He explained a series of experiments made by throwing a stick twenty thousand times at a line on a table, deducing his doctrine of chances, represented as *Pi*, from the number of times the stick struck the line, or approached it. Three years ago he communicated the results of a series of twelve thousand pitchings, but they were made by three different individuals, and gave a result much less close than those made by himself.

Mr. W. E. HAMILTON contributed a paper, entitled "A mode of representing any psychical fact in meteorology." The method proposed employs co-ordinates instead of the usual one of rectangular co-ordinates.

The Section adjourned.

SECTION B.

ATOMIC PHYLLOTAXY. THIS WAS A PAPER BY PROFESSOR PLINY EARLE CHASE.

The phyllotactic series of numbers are 1, 2, 3, 5, 8, and so on, each number being formed by the addition of the two preceding ones. These numbers have been found to determine many periods of plant growth and also the relations between the orbitate times of the different plants. The reason assigned for the influence is that they determine the distributor of perturbation and beneficial influences in the most complete manner possible. Gerber has presented a series of empirical divisors for chemical atoms which are approximately phyllotactic. Upon making them exactly so the values of chemical atomicity as given by latest recomputations may be represented with a mean approximation which is more than twice as great as that of the hydrogen divisor.

APPARENT SIZE OF MAGNIFIED OBJECTS.

Mr. T. C. Mendenhall, of Columbus, took the chair in the Section of Physics.

The first paper was read by Professor W. H. Brewer on the above subject. As is generally well known, a magnified object seen through a microscope seems larger to some persons than to others. In May, 1873, the lecturer made a number of experiments in this subject which were continued at intervals until the present time, and of which he would now give the results. A small insect was found to be the best object for this purpose, and that used was an ordinary louse. Observations were made with graduated rules of various sizes. The number of persons experimented were over four hundred, many of whom were long accustomed to the use of the microscope. Ladies, children, artisans, laborers, and those of all classes, ages and occupations were among the number and very many different estimates were given. A magnified image was projected at ten inches and it was found that by far the larger number underestimated the size value theoretically given it by scientific microscopists. This value was about 4.66 inches. Two estimates were only one inch while seven were over a foot, while one of two students likened it to a cockroach, the other to a lobster. The rule among new students is that the first impression of its size is somewhat larger than the real value and this is maintained for some time. For example, a fellow professor was asked the length of the object, and answered, about nine inches. Seven years afterward, although he had been using the microscope during the whole time, the same question was asked, and he answered, seven inches. A small difference considering his experience, but the fact was that he used his microscope only for form and not magnitude. Mechanics and artisans generally over-estimate. A draughtsman who was accustomed to measure and draw all his work after careful examination, said it was at least five feet long. A professor of physics said it looked six inches long and also a foot long as he wished. In fact, he could see it any size. A few persons were tried with regard to the inconsistency between distance and size, but no record was kept.

After the reading of the paper a short discussion ensued.

Mr. W. LECONTE STEVENS said that he had made many physiological experiments with the reflecting stereoscope, and had come to the conclusion that the value of any estimate as to size or distance of an object must depend upon the condition of the observer's eye, and especially of the ciliary muscle.

Mr. CHAS. S. HASTINGS, of Baltimore, thought that Professor Stevens laid too much stress upon the condition of the ciliary muscles of the eye.

Prof. WEAD said that his experience was that an educated eye, so to speak, usually made a smaller estimate than an unpractised eye.

A number of other members of the section also made a few remarks suggested by Professor Brewer's paper.

VISION BY THE ELECTRIC SPARK.

This paper, by Mr. W. Le Conte Stevens, gave the result of a series of experiments in stereoscopy from a pair of perfectly similar figures viewed by the momentary illumination of an electric spark. The stereoscope used was a reflecting one, such as is used to denote the value of the optic angle that results from any possible relations between the visual lines of a pair of eyes. Vision may thus be made normal or abnormal at will. The use of the spark in the study of binocular vision is no novelty, but seems not to have been employed hitherto in studying abnormal vision with the visional lines divergent on the peculiar mode of stereoscopy recently devised. The electric light was separately conveyed upon each of the pair of pictures by means of a pair of lenses, which strongly illuminated the pictures in a dark room. The stereograph first employed was one of the moon, formerly used in vision by continuous light. The observer placed himself with closed eyes in proper position before the stereoscope, while the manipulator of the apparatus arranged the cards. He was then requested to interpret the combined retinal images produced by illuminating the cards with a single spark, not knowing previously whether to expect convexity, concavity or flatness, as might be produced by arrangement of the cards and the interval of illumination being too brief for any possible play of the eyes. When the relation between the visual line was such as to imply no unusual muscular strain it was found possible to interpret the binocular retinal image correctly by the light of a single spark. Experiments with other cards were made, all of which tended to confirm the conclusion reached by Helmholtz in opposition to many other physiologists, that neither the play of the eyes nor the perception of double images is necessary to the attainment of binocular relief, however important those elements may be in confirming our usual judgments whether conscious or unconscious. To test the illusions of abnormal vision by the light of the electric spark another series of experiments were made in which the optic angle was varied from 3° of divergence to 50° of convergence of visual lines. The graduated reflecting stereoscope was employed, the manipulator of the apparatus keeping the observer's record of estimates. Eight estimates for each of thirteen values of the combined image of a pair of stereographs of the moon were recorded on examination and the results were found to be not widely different from those secured by continuous light. The limits of error were much wider, showing that any single judgment under such abnormal conditions has very little value.

No discussion followed the reading of this paper.

SECTION C.

MINERALS DECOMPOSED BY CITRIC ACID.

In the Chemistry Section, Prof. Bolton read a third paper on "The application of organic acids to the examination of minerals." In the two papers previously published under the same title, Dr. Bolton has shown that citric acid has a power of decomposing minerals little less than that possessed by hydrochloric acid, and that the organic acid can be advantageously employed in field work for assistance in determining species. In the second of these papers we stated that the results obtained by the prolonged action of citric acid on minerals differed greatly from those recorded in the accompanying tables and give notice of our intention to return to the subject at a subsequent period. We have continued our researches. Dr. Bolton said this afternoon, and gained a few additional facts which we deem of sufficient interest to warrant a third or supplementary paper on the subject. The results given in the tables submitted to the house were obtained by acting on the minerals in fine powder first in the cold for a few hours, and secondly at a boiling heat for a few minutes. We find, however, that many species which resist the brief action of a boiling concentrated solution of citric acid are more or less completely decomposed by prolonged contact with the same solution at the ordinary temperature of the work room, say 60 degrees to 70 degrees Fahrenheit. But a small number of the 200 minerals embraced in the tables were submitted to the prolonged action of the acid solution, and those tested were selected as representative of groups, sulphides, oxides, silicates, &c. The progress of decomposition was noted at various periods from a few days to more than two years. A solution of citric acid concentrated in the cold was used in all the experiments, 38. *Sulphides* chalcocite showed signs of decomposition at the end of two days, and at the expiration of several months yielded a solution of a fine green color. Ullmanite showed signs of decomposing in two days, and afforded in a month a very dark colored solution. Arsenopyrite was attacked in a few days. Pyrite showed decided evidence of decomposition in eight days; one month later the solution acquired a reddish yellow color, and reacted for iron and sulphuric acid. Chalcopyrite acts similarly with the solution, being of a greenish yellow hue and reacting for copper and sulphuric acid. One gramme of the mineral lost about eleven percent of its weight after 14 months' contact with the acid solution. Quantilative experiments were not in general conducted, for it soon became clear that the amount of decomposition was dependent on the time and would require more attention than the results to be gained warranted. Smaltite was decidedly attacked after eight days; the presence of sulphuric acid in the colored solution was noted. Tetrahedrite was strongly attacked in four days and bornite in about four months. *Oxides*—The experiments were made only with those minerals which resisted the acid solution on boiling. Magnetite and linnæite were strongly attacked after eight days, hematite decomposed after several months, and exposure to sunlight diminished the intensity of the colored iron solutions. Of silicates, datolite was the most quickly decomposed, yielding after twenty-four hours gelatinous silica. Hornblende, physoscene, almandite, spidote, vesuvianite and serpentine decidedly decomposed in eight days. The felspars were very unequally attacked. Talc and kyanite appeared to resist the action of citric acid. Muscovite and biotite yielded very slowly, the taller soonest. The reader gave a number of other interesting results of his tests, and closed with a table showing the relative disintegration of rock-forming and associated minerals by citric acid in solution:

Quickly.	*Slowly.*	*Very Slowly.*	*Not Decomposed.*
Carbonates	Serpentine	Orthoclase	Quartz
Phosphates	Pyroxine	Olecoclese	Corundum
Prochlorite	Hornblende	Albite	Spinel
Chrysolite	Labradorite	Biotite	Beryl
Nephelite	Garnet	Mucovite	Fluorite
	Epidote	Toumaline	Barite
	Vesuviante	Staurolite	Talc (?)
	Pyrite	Henatite	Kyanite (?)
	Linnæite		
	Magnetite		
	Gypsum (?)		

Dr. Leeds described a new series of compounds of various aromatic bases with acrolein, œnanthol and other aldehydes. Certain of these compounds yield by sublimation, with the evolution of water or ammonia, or both, new bases containing nitrogen. Certain of the salts of these bases had been prepared, the salts forming in some cases beautiful crystals, but the work had not advanced sufficiently to describe the results in full. One of the compounds, Naphthylamine-Œnanthol, possessed a delicious pineapple odor (a sort of artificial pineapple flavoring material).

Several papers were then called for, including one by Dr. Baker Edwards, but none of the readers being present the section adjourned.

SECTION D.

MECHANICAL SCIENCE.

On this section assembling Professor J. Burkitt Webb, Cornell University, Ithaca, N.Y., read a paper on a "A Method of Cutting Screws of increasing Pitch." "A screw," he said, "whose pitch increases uniformly from one end to the other may be cut by the following method: Mount a suitable cutter (say a Brown & Sharpe cutter for the teeth of wheels) in a lathe or milling machine and set or arrange under it a sliding bed, so that the direction of its feed shall make the same angle with the plane of the cutter. As the axis of the screw, at the middle point of its length, is to make with the thread, arrange journals in the bed, in which the cylindrical blank for the screw can revolve and slide, and on the end of the blank place a cog-wheel with suitable gearing to connect it with the feed of the machine, so that the blank will be regularly revolved while at the same time it is free to slide endwise. Fasten now a curved template on the screw, formed of a piece bent to fit the cylindrical surface and having its edge suitably shaped, and place a pin on the bed for this edge to rest against. The use of this template will be to feed the screw forward as it revolves until a small portion of the thread has been cut. To complete the screw, let now a blank cutter of the same form as the real cutter be attached to the bed to act as a nut; it will be of the best shape for this purpose, and must be placed slightly in advance of the real or working cutter and in the same relative position to the screw as the latter occupied when commencing the thread. This nut will have a line contact at all parts of the thread, which is the most that can be obtained, and as the bed feeds along it will increase the distance between this nut and the working cutter, and a screw will result whose pitch will increase in arithmetical progression—that is, directly with the angle."

THE TRANSVERSE STRENGTH OF BEAMS.

Professor Gaetano Lanza read a paper on "Transverse Strength of Large Spruce Beams," which is summarized as follows:

The moduli of rupture and the moduli of elasticity of timber given in our text books and engineers' handbooks for practical use in construction—the former for determining the breaking weight of beams and the latter for determining the deflections under given loads, have in almost all cases been deduced from experiments on small beams not at all comparable in size with those in common use in buildings. While such a course is to-day recognized as misleading by our best engineers, it has been and is still followed very extensively, because, with a very few exceptions, we have had no experiments on the strength or deflection of full-size wooden beams under a transverse load. Again, no experiments, so far as I know, have been made on the large scale and strength of such timber joists as are used in framing, where mortises and tenons are used, or where notches are cut, and we have had no experimental basis from which to deduce their strength, so that the loads which are supposed or assumed to be their breaking loads are probably very far from the truth. In view of these facts and of the practical importance of experiments on full size pines to the engineer, the architect, and the builder, I have been so impressed with the desire of having at the Massachusetts Institute of Technology the means of carrying them on, and of giving my students the opportunity of performing them, that I have had constructed a machine capable of testing a beam transversely loaded with a weigh not greater than 50,000 pounds, provided the beam has a length not exceeding twenty-five feet. By its means they were able to test most of the framing joints used in practice. The eighteen results obtained by testing spruce beams were here given in tabular form. As to the quality of the timber it was, with the exception of Nos. 14 and 15, all common merchantable stock, its average modulus of rupture being 4,623 lbs. per square inch, the largest being 5,651 lbs. Nos 14 and 15 were cut in 1877 and had been seasoning till April 1882. Three Nos. 1, 2 and 13 are tests of framing joints, and hence from them we cannot determine a modulus of rupture. No. 5 (9) was a piece sawed from one end of No. 5 after this had been broken, and hence from this no modulus has been deduced. The question must now be answered how these moduli compare with those commonly given in our text books and engineer's hand books:

	Max.	Min.	Mean.
Hatfold gives	12,996	7,506	9,900
Rankine gives	13,300	9,900	11,100
Laslett gives	9,707	7,506	9,045
Troutwine gives	......	......	8,100
Rodman gives	......	......	6,168
These tests have given to merchantable stock	5,651	3,271	4,623

Hatfield's, Taslett's, Trantwine's and Rodman's figures are from their own experiments and as is evident from the above table they differ very considerably. Trantwine advises for practical use to deduct one-third on account of knots and defects, hence after making this allowance he would use 5400. My own figures would give this only for the best of the stock in common use, and in the case of knotty and poor timbers would give much lower values, I obtained as low an average as 4623. It will be observed that although Rodman's result is not at all as small as mine, it is smaller than any of the others; this is to be accounted for by the fact that the pieces which he experimented on were 5¾ inches deep, 2⅞ inches wide and 50 inches between the supports being larger than those generally employed by other experimenters though not at all as large as those used in practice. Only three tests have been made to determine the modulus of elasticity and these have given respectively as follows:—

No. 3	1,237,215
No. 4	1,067,893
No. 6	938,453
	3)3,248,561
	1,081,187

The machine has only been at work about two months, and hence no more work has yet been done, but these and other series of tests will be made in the future, and it is hoped will furnish us with some more information of practical importance.

THE NEW FLYING MACHINE.

Joseph L'Etoile, of the Department of Interior, Ottawa, read a paper entitled "A Review of the Subjects of Atmospheric Currents, Electricity and Gases with a view to Practical Ærial Navigation by Means of Balloons." He held that practical ærial navigation is possible, but the form of the balloon must be improved. Glasier considers the present form is but the first principle of some aerial instrument that remains to be suggested. He would now propose that the balloon should take the form of a fish and be provided with a propeller, a rudder, an air compartment gas and air pumps, electric battery, electric meter, safety valve ropes at the reach of the two balloonists and ballast. Ordinarily there is a great loss of gas from various reasons. The neck of the balloon constantly remains open and when the heat of the sun causes the gas to dilate it escapes; but by the new plan a gauge shows the expansion, whereupon the surplus gas is pumped from the centre of the balloon to the reservoir in the car, and when the balloon enters a cloud and the gas shrinks and the balloon begins to descend to the earth, the gas is pumped back again into the bag, which thus is enabled to remain at the same height, and ballast is saved. Again the balloon contains a compartment made to receive a quantity of compressed air which is connected with an air pump, and by it may be exhausted or filled, thereby enabling the balloon to descend with ease to the earth or rise more rapidly through the cloud. The propeller may appear to work under some disadvantages owing to its distance from the car and the means by which it is put into motion through the opening of electric wires connected with the battery in the car. This was tried in 1869 and found to work satisfactorily. All danger from electric flashes coming in contact with the escaping gas through the envelope of the balloon has been obviated by using material that prevents such escape. In the new form of balloon the propeller and rudder are made of light india rubber. By a gentle turn of the chain wheel at the rear end of the car the rudder or tail connected to it by small cords will incline to the left or to the right, and by this means the balloon will be made to gain from ten to thirty degrees against atmospheric currents, and it will not be to the balloonist an instrument such as the steamboat and locomotive are to the engineer. And it must be borne in mind that it is not intended to navigate against strong wind currents which is unnecessary as the atmospheric currents vary at different heights and the aeronaut cannot fail to meet the most favorable wind. This interesting paper closed by a reference to the advantages of such a balloon under the control of man.

SECTION E.

THE RELATIONS OF FORMS OF LIFE.

In the section of Geology and Geography this morning, the first paper was on the relations of Dictyophyton, Phragmedictyon and similar forms with Uphantaenia, by James Hall. These organisms have not been well understood. The first genus described was the hydnoceras of Conrad, a tuberculate form, at first thought to be a cephalopod. Vanuxem described the uphantaenia, but could not determine its true affinities. In 1863 Prof. Hall described these and certain other genera as fucoids. Principal Dawson is upon record as holding this view. In 1881 Prof. Whitfield in one of the Bulletins of the American Museum of Natural History, New York, represented that all these forms exhibited the structure of that interesting glass sponge called Euplectella or the Venus Flower Basket. Prof. Hall thinks the whole group may be referred to the sponges except the uphantaenia, which may be a fucoid, because the reticulate covering is wanting.

Prof. WHITFIELD remarked that Hall had reversed the proper position of the specimens in his description—what is the true summit is mistaken for the base.

A FERN-LIKE ANIMAL.

Notes upon the genus plumbites, by James Hall. This organism resembles ferns very closely, but he thinks it related to an animal, possibly a hydroid. Dr. Dawson was called upon to give his views. He had described them from the Devonian of the East as lycopodiaceans. They are associated with marine fossils as if they came from the sea. Lesquereux has recently found specimens showing they are true plants with hollow stems growing in the water. Dr. Dawson is about to describe them in a report to the Canadian Government as psilophyton. Dr. Newberry has collected these same forms from the Waverley grant in Ohio, and thinks they are hydroids, or if seaweeds they may be nullipores.

THE ORIGIN OF PETROLEUM.

"A source of the bituminous matter in the Ohio black shale," by E. Orton, State Geologist of Ohio. The Huron and Cleveland black shales of Newbury are thought to be one group in the upper Devonian. It is a strip 10 to 15 miles wide, 200 long, extending from Lake Erie to the Ohio river. These shales contain from 2 to 22 percent of organic matter, and are the source of some of the petroleum wells. Dr. Newbury, in the Ohio report, regards this organic matter as of marine origin. Decomposition had been carried on so far that all structure had been obliterated. Dr. Orton thinks he has discovered the nature of this organic matter. They are sporangia or spore cases of lycopodiaceous. He had instituted a very thorough study of the shale with the microscope, and finds numerous resinous dices from 1-200 to 1-50 of an inch in diameter. They are translucent, amber colored, appearing as a rusty crust. Different beds afford dices of different sizes. They burn freely, and are insoluble in alcohol. Their surfaces are ridged and furrowed, and sometimes there are stem-like attachments. After making these discoveries he found that Dr. Dawson had described similar forms from Little Point, Lake Huron, some ten years since, giving them organic and specific names. As these beds contain conodants and other marine forms, they are very interesting for study. Dr. Orton mentioned the three theories that have been suggested for the origin of petroleum. 1st, from marine plants; second, from animal decomposition and third from remains of these spare cases. The Pennsylvannia and New York petroleum wells originate in the equivalent of the Ohio black shale.

Dr. NEWBERRY, formerly State Geologist of Ohio, commented upon the paper, accepting in the main its views, and complimenting the skill of the author. Huxley's view of the origin of common coal from spores of cryptogamia was mentioned as similar, but if true, there must have been an immense destruction of the softer tissues.

Brief remarks were made by Dr. Dawson, Prof. Hitchcock, Major Hotchkiss, Profs. Cox and Williams, and the section adjourned.

In the afternoon the theatre was given up to the section of Histology and Microscopy, Dr. Carpenter's audience being too large for that section's room.

Later on the Geologists resumed, with

A CONTRIBUTION TO SEISMOLOGY.

The object of this paper, by Richard Owen, was to point out the relation between solar and terestrial dynamics, especially during the shorter secular changes: to show that when there is even a slight increase or diminution of motive power in the sun, there is both as regards time and space, either directly or indirectly, a corresponding increase or diminution of the earth's kinetic energy, bearing an inorganic and also an organic matter.

THE GREAT SALT LAKE VALLEY.

William Bross contributed a paper on the topography and geology of this famous valley. The valley is 200 miles long and nearly as wide. On the east are the Wahsatch and Uintah mountains, whose eastern slopes are drained by the Colorado system into the Gulf of California. Between them and the Sierras, a distance of 500 miles, lie the Salt Lake and other valleys which have no connection with the sea, and their waters are very salt. The great lake is 100 miles long and 50 broad, and 4,250 feet above the sea. After the melting of the snows the water rises from 4 to 6 feet, and salt is freely deposited near the shores when the volume has been reduced by evaporation. Gen. Dodge has discovered that the lake has risen permanently 12 feet since the first levels were run for the Union Pacific Railway, compelling an unlooked for expense in the construction. The low lands near the lake are very fertile, furnishing 90 bushels of wheat to the acre for Brigham Young before 1865. As rain is very scarce the crops are maintained by irrigation. The dryness of the air and mild temperature produce an admirable climate. The mountains west are short ranges from 8,000 to 12,000 feet above the sea. The rocks of the valley, as described by Clarence King as 56,000 feet thick, being archean, cambrian and cretaceous. The last yield coal in abundance. Gold and silver mines abound to the south of the lake. In 1820 the production of the precious metals amounted to $15,000, and in 1880 it was $7,000,000. On all sides there are beaches of sand 200 feet above the lake, which must have been deposited by the salt lake in ancient times when the water was fresh, and discharged either into the Colorado on the south or the Columbia on the north. The author suggested that the former greater precipitation of moisture may have been due to the existence of the *Atlantis*, or an island filling a large part of the present Atlantic ocean. It was remarked that recent levels proved the existence of two old beaches, the first 850 and the second 1,200 feet above the lake, while the ancient lake has received the name of Lake Bonneville by the Government surveyors.

EAGLE RIVER, LAKE SUPERIOR.

The Pre-glacial Channel of Eagle River, Lake Superior, by Charles Whittlesey. About thirty-two feet below the surface the workmen in the Phœnix Mine found a mass of gravel which they followed several hundred feet toward Lake Superior. He thinks the old channel was excavated before the glacial period.

THE FOSSIL FISHES OF CANADA.

Recent discoveries of fossil fishes in the Devonian rocks of Canada, by J. F. Whiteaves. These fish are remarkably like those of the old red sandstone of Scotland and Russia. They were discovered by R. W. Ells, of the Geological Survey of Canada in 1879 at Scaumenac Bay on the north shore of the Restigouche river, immediately opposite Dalhousie, New Brunswick. In 1880-1 Mr. A. H. Foord of the same survey continued explorations at this locality and obtained a large and instructive series of specimens. The rock is the Bonaventure formation of Logan, which is proved to be Devonian by these discoveries. As land plants occur with them it is possible that these creatures lived in fresh water. These are some of the most important discoveries made by the Canadian Survey for several years. On the south shore of the Restigouche, in 1881, Mr. Ells discovered another series of deposits, containing remains of fishes in limestones of about the age of the Oriskany and Gaspé sandstones. The paper was illustrated by numerous specimens and by diagrams prepared by Mr. Albert Grignard, late draughtsman to the Canadian Survey.

After a few remarks on this paper, the section adjourned.

SECTION F.

SELF-SACRIFICE IN NATURE.

The proceedings of the section of biology were opened about eleven o'clock with an address by Professor Thomas Meehan, botanist in State Board of Agriculture, Pennsylvania, Vice-President of Academy of Natural Science of Philadelphia, on "Variations in nature," telling the impressions given him by his experience in regard to the origin of species, he thought the Darwinian theory could not be controverted. He had opposed every weakness in the natural selection theory, and his task now was to show that the doctrine of evolution is stronger for it. There is no doubt that the present varied species are due to the dropping out of intermediate species. Darwin and others thought that every variation tended to the good of the plant which had been changed; that utility was the impelling force in all changes. There are cases, however, where widely distributed species have no advantage over less widely spread species. And how does a cactus gain by changing its twenty protecting spikes for only ten? Nature's object is development, not individual good, and her demand on us all is self sacrifice. The most selfish animals lay down their lives for their young, and the same law governs vegetable life. Millions of seeds die for every one that lives, though nature could effect fertilization without any such waste. All this wasted seed can only be for the good of future generations. The Professor dwelt on the wonderful variations of nature, no two peas or leaves being alike. (Specimens of seeds were here handed round to show their difference.) And these changes are not only temporary, but are continuous. Variations may be made permanent by heredity, white flowers producing seeds of white flowers; variation goes on, but is held in temporary check by heredity. Some forms are preserved by heredity for a hundred thousand years—as the fern *onoclea sensibilis*. Evolution is simple when each individual is looked on as carrying on the great work of destiny. The round of organic existence is one not of self-seeking but self-sacrifice. How exactly this is in accord with the principles of Christianity, with the death of its Founder! Death comes to species as well as individuals. We have no alternative but to believe that natural selection is in the hands of some directing power, which we have not yet fathomed, but which is making all things work together for an object not yet even dimly seen by the wisest man. The advocates of evolution will, in the future, be regarded as Christianity's best friends.

THE PRESERVATION OF THE BRAIN.

In the section of biology, Dr. W. Osler read a "demonstration of a series of brains prepared by Giaconim's method," discovered in 1878. By the method the human brain is taken as fresh as possible, placed in saturated zinc chloride solution (50 percent) in which it floats, so that it has to be turned or covered with cotton-wool soaked in the fluid. On the second day the membranes are removed. This is the only tender part of the process as the dissection must be carefully made about the nerves. After having been in the solution for about a week the brain is transferred to alcohol in which it sinks, so that cotton-wool must be placed beneath to obviate the effect of pressure. The organ can remain in spirit an indefinite time, but after six or seven days is ready for the third stage of the process—immersion in the best quality of glycerine, in which it floats. It remains in this for about a week. It is then removed, the surplus glycerine washed off, and the brain exposed to the air in a protected place. When dry it receives a coating of ordinary varnish, and remains unchanged for years. The method is applicable to the brains of small animals, but in them the stages of the process are shorter. In the human brain the process lasts only about three weeks. Professor Osler showed a number of specimens of the brains of man, dogs, cats, rats, etc., all beautifully preserved by the process, some of them for three years.

Prof. E. C. STEARNS, of Berkeley, California, then read paper on a new species of Alcyonoid Polpy. Mr. W. H. Edwards also gave a contribution on the Polymorphism of the Lycæna Pseudargiolus, a kind of blue butterfly.

THE STERILITY OF THE CANADA THISTLE.

Prof. E. W. CLAYPOLE gave an interesting account of the sterility of the Canada Thistle at Yellow Springs, Ohio. He referred to the fact that many European weeds which were comparatively harmless in Europe became most unmitigated nuisances when transplanted to this country. The so-called Canada thistle was an European plant transplanted to America. In 1873 he noticed a small patch of Canada thistle in Southwestern Ohio and was struck with its presence, as the plant was not to be found elsewhere in that part of the State. On enquiring he found it had sprung up in 1868, chance seed having come along with a bundle of nursery trees, tied up in straw, which came from Rochester. He noticed that the patch year after year did not increase materially in size, and wondered at it, since thistle down is carried so easily over country, sometimes over large bodies of water; at last he gathered the heads and examined them, and found no seeds. He later on examined the flower through the microscope. He found the stamens and pistil all right, but in the anthers the cell was completely empty of pollen. Every flower was the same. There being no pollen formed, no fertilization could take place and the thistle was seedless. Hence the thistle did not spread in the neighborhood other than a little spread by the roots in the immediate locality. He therefore would ask for information of the cause of the thistle being sterile in that locality, whether it was the climate or not.

Prof. ASA GRAY said the same thing occurred in poplars, &c. The female plant of the Canada thistle must be entirely destitute of pollen and the seed or seeds dropped at Yellow Springs might have been productive of female plants only. In the thistle there was a male plant which bears pollen and also a hermaphrodite plant productive of pollen as well.

Prof. CLAYPOLE thought that under that explanation it was curious that the seeds should have been all female.

Prof. BURRILL mentioned a case in Central Illinois exactly the counterpart of the case recited by Prof. Claypole under circumstances which could hardly be explained by Prof. Gray's statement.

Before adjourning the section elected B. D. Halsted, T. J. Burrill and Thomas Meehan to act with the President and Secretary of the section as a sub-committee to recommend the Nominating Committee, the Vice-President and Secretary of the next meeting.

The section then adjourned.

SECTION G.

ADDRESS BY DR. W. B. CARPENTER ON ANGULAR APERTURE IN RELATION TO BIOLOGICAL INVESTIGATION.

In opening his address Dr. CARPENTER said that his object was to present to the section the value of angular aperture in relation to biological investigation. He then proceeded to give the results, both theoretical and practical of work in this direction by himself and other English scientists, among whom the principal were Dr Dallinger and Professor Abbey. Before going on with the subject, Dr. Carpenter exhibited two improved microscopes made by Nachet, capable of being used as dissecting microscopes, as well as a compound one of three powers. One feature of this instrument was the doing away of the adjusting screw and the substituting of a simple catch, by means of which all the parts can be easily adjusted. The cheapness of the instrument is not the least of its recommendations. All of the optical work in connection with the glass is also faultless, and the whole instrument is a perfect one. Another instrument had been the result of his own work for the purpose of examining rocks and other opaque specimens. He also explained Professor Abbey's low objective having a power of five inches, and with a field about an inch and a half in diameter. By separating the front lines from the back ones the power of the glass is greatly increased and by this means the field can be exactly filled. With regard to the subject proper of his lecture he said that he had lived through the whole period of achromatic microscopy in England. When he went to London as a student in 1834 he possessed himself of a French combination by Chevalier, and from that day to this he had been a microcopist. One of the first advantages made apparent by the introduction of these achromatic combinations was that the angle of aperture could be widened. It was found that this improvement allowed a whole lens to be used and every part of an object to be closely inspected. Prof. Lister, on purely mathematical principles, showed how to construct lens having a still wider aperture, and then a race commenced among the makers of microscopes. But, unfortunately, these makers took as proof of the excellence of their lenses their power of resolving diatomes, and not their adaptability for general investigations. Then, gradually, qualities of penetration or focal depth and definition came to be regarded as important, and that the sacrifice of focal depth to the angle of aperture was a great mistake. Prof. Abbey has shown that when we get beyond an ordinary degree of minuteness, the usefulness of a bioptical lens ceases. The basis upon which to proceed is therefore a clear and definite one, funded as it is upon that theoretical knowledge which shows us how the angle of aperture is of use and also the relation which exists between the angle of aperture and a satisfactory focal depth. By means of a medium of oils the angle of aperture has been enlarged beyond the largest theoretical angle of 180 degrees an end which would be perfectly unattainable with a dry objective. The most important part of the whole, however, is the actual working of such a glass as this. Doctor Dollinger habitually worked with a lens of meduim angle. Constant allusions are made to the working of lower powers to a sufficiently wide angle to do the work of a higher power. This was a mistake and the constant use of a glass under such conditions must infallibly ruin the eyes. He himself always worked with low eyepieces and gained his power by means of the objective glass. A four-tenths is the most useful glass. To work up a four-tenths to an angle of 150° say, is just to destroy it, for the purposes for which it is most useful. He was sorry to learn that American makers were making their inches to work up to an angle say of 90° instead of 30°, which is about the largest aperture at which it can be useful.

Dr. Carpenter on sitting down was greeted by loud applause.

In answer to a question of the President, Dr. Carpenter said that Dr. Dallinger used a dry lens with an angle of aperture of about 140°. Lenses of wide aperture are also useful for many purposes other than of resolving fine line diatoms. The point he specially wished to urge was that ordinary workers should keep to the lower process and not fancy that the high angled lens was universally the most useful. For example, the examination of an injected transparent object can be carried on much more satisfactorily with a lens of low power, but good focal depth. Every one should understand that a binocular was more than a philosophical toy, but they should not be used at any angle greater than a quarter or 50°.

Professor ALBERT CHESTER spoke in favor of American microscopes. He thought that in England exaggerated ideas were held concerning the use of wide angled objectives by American microscopists.

Dr. OSLER then read three papers on the

HISTOLOGY OF THE BLOOD.

The first was a treatise on the developments of blood corpuscles in the bone marrow. The lecture was a brief resumé of the views current regarding the development of blood corpuscles. The red marrow always contains a form of corpuscle thought at one time to be peculiar in the mammal to the blood of the embryo, viz., the nucleated red cell. This is an intermediate stage between certain of the colorless marrow cells, and the ordinary red corpuscles. The stages traced by the lecturer were—(1). The colorless marrow cells become less granular, and the protoplasm gets more homogenous. (2). It becomes gradually tinged with hæmo globin, the tint becoming progressively deeper until it may attain that of the ordinary corpuscle. The nucleus remains unaffected. In this form they constitute the well-known nucleated red corpuscle. (3.) The nucleus or nuclei gradually disappear after breaking up into smaller portions, and the entire protoplasm of the cells is uniform and indifferentiated. These observations of the mode of production of the red non-nucleated cell in the marrow, accord in the main with those of Newmann. The view expressed by some authors that the nucleus migrates from the cell, is believed to be incorrect. The appearances on which it is based were unknown to the lecturer, but they were believed to be the result of physical changes.

The second paper was on

THE THIRD CORPUSCULAR ELEMENT IN THE BLOOD.

By the third corpuscular element in the blood is meant certain small colorless discoid bodies, one-third to one-sixth the size of red blood corpuscles, quite common in the blood of mammals, and about which much discussion is at present taking place. They circulate free in the blood with the other corpuscles, but in the withdrawn fluid tend to adhere together, forming irregular lumps or collections. They correspond to Zimmerman's "Elementary Corpuscles," to the individual elements of Schultzles granule masses, to the Hæmstoblasts of Hayem and to the "Blutplettchen" of Bizzozero. Scanty in the blood of healthy adults they abound in the blood of the young and in that of individuals in an anæmic condition. The most suitable objects for their study is the blood of the youngest, in the vessels of which they can be seen as isolated corpuscles.

The third paper was on the

MICROCYTES OF THE BLOOD.

This paper was a series of notes on the microcytes of the blood and their probable origin. Microcytes are exceedingly tiny red blood corpuscles 1-5000 to 1-9000 of an inch in diameter which are met (1) in the blood of embryos and of the new born, (2) occasionally and in small numbers in the blood of healthy individuals (3). In certain diseases particularly the severer forms of anæmia and (4) after severe hemorrhage. No satisfactory explanation has been given of their origin. The author had in the spleen tissue and in the bone marrow seen their formation by a sort of budding from the ordinary red blood corpuscles. In the conditions above mentioned particularly after hemorrhage and in profound anæmia the red corpuscles often present great irregularities in outline and projections. In fresh specimens of spleen and bone marrow the author had seen these littles particles become detached from the blood cells,—moving about in the currents on the slide,—and when so detached presenting all the characters and appearances of the microcytes in the same field.

A brief discussion upon Dr. Osler's papers then ensued, in which Dr. Carpenter, Dr. Elsberg, Dr. Van der Weide and a number of other members of the section took part.

The rest of the afternoon session of this section was occupied by a description of a new form of constant pressure injecting apparatus by Mr. William Libbey, superintendent of the chemical laboratory at Princeton.

SECTION H.

A SCHEME OF ANTHROPOLOGY.

The first paper read yesterday morning in the Anthropological section was that of Professor Mason, on "A Scheme of Anthropology." This paper was designed to enable anthropologists to classify their material, and also to indicate the steps of progress which are involved in a true scientific investigation. For this purpose the Greek words, *Genea*, *Graphe*, *Logos*, and *Nomos*, were employed as the suffixes of several series of terms. For example, the whole study of man, would be represented by the four words, anthropogeny, anthropography, anthropology, anthroponomy. The first word covers all investigations referring to the origin of man, the second to correct observation, the third to classification, the fourth to the discussion of the laws of the science. Under these general subjects Professor Mason included, for ancient history, the three terms, arch-

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The Witness.

WEDNESDAY, AUGUST 30, 1882

THE MOUSSEAU ERA.

It is not easy to arrive at the true cause of the barter which has taken place between the Cabinet at Ottawa and that at Quebec. There are many reasons put forward for the change both by Conservatives and Liberals, all of which are very plausible, and each of which would be quite sufficient to account for the shuffle. There can be no doubt that those who see in the new arrangement the cunning hand of Sir John Macdonald, are not altogether mistaken; Mr. Langevin was too heavy metal for Mr. Mousseau, and now that Mr. Masson will never return, some French-Canadian had to be found who could be played off against Mr. Langevin in the Cabinet. There are two kinds of conservatism which are necessary to any ruler in this Province: Conservatism in politics, and conservatism in the matter of religious domination as against the new ideas of New France. Mr. Chapleau had only the first. In politics he was well enough; he could pool interests with the best, but in religion he was inaugurating an era whose influences were those of France, as it now is. The capital of the French Republic which was being introduced brought with it, to some extent, the ideas of the French republic, and these were considered, to say the least, as disturbing if not upsetting in their influences upon the people in their relations to the Church. The speech of the new Premier, delivered in Jacques Cartier, unfolding his policy, is in strong contrast to those remarkable ones delivered by his predecessor, when he hoped so much from French capital, hopes which were sadly disappointed. The speech of Mr. Mousseau is very conservative. The zeal for development in the new direction is totally wanting. Instead we have from the new Premier lamentations over the emigration of the young people to the United States, and the effect that new ideas have upon their minds; ideas which they imbibe at "the expense of their morality, "their faith, and their nationality." Mr. Mousseau attributes the desire to emigrate to the lack of means on the part of farmers to settle their children upon Government lands, and one of the main planks of his new policy is, therefore, "colon-"ization." If the result of settling on farms in Quebec has been in their fathers' cases so discouraging that they are unable to settle their children on free Government lands, what inducements have the children to follow in the fathers' footsteps. The fact of it is, that so long as the present regime of Church and State joint paternal government is prolonged in the interests of the Church, at the expense of the minds and pockets of the people, so long will the new ideas, the new liberty and the new life which they can only secure by going abroad, be attractive to the most energetic and brightest minded French-Canadian youth. Mr. Mousseau, in discussing this question, upon which he dwells at great length, furnishes, we think, the key-note of the harmony which his orchestra is expected to give this Province. Mr. Mousseau is not only desirous of maintaining the regime unimpaired in the Province, but he is determined that it shall continue to dominate the whole Dominion from Ottawa. He gives the history of the successful opposition of the Ontario boundary question. He did not oppose the award it appears on the ground that it was illegal, but that if it was confirmed, "the "Federal equilibrium would be broken." It was he and Mr. Masson who refused to accept the decision of the arbitration, who demanded that it be referred to the Privy Council. Mr. Mousseau demands that the Province of Quebec be given an equivalent if it be awarded by the Privy Council. It would puzzle any statesman to say where Quebec was to get her equivalent, or to see what good it would do her if not settled by French-Canadians. The centre of power is moving away from this province, and will take a great bound west some of these days, and then, resist as strongly as it may, the Province of Quebec will be helpless in its struggle to dominate the Dominion as a grasshopper would be in a whirlwind. We may stand still if we will, but Western Canada is moving rapidly, and soon we shall have to move with it. It is, however, doubtful whether Mr. Mousseau will be more than nominal leader of the Government. So far Mr. Wurtele has shown that he possesses the ruling mind, and he has had his own way in the matters which are at present the most urgent ones in the eyes of the public, and that in spite of opposition, it is alleged, from Mr. Mousseau and other members of the Cabinet. This may, however, be because neither Mr. Mousseau nor any one else could devise a better way of obtaining the much needed money. Mr. Wurtele's plan is to obtain money by plundering commerce, and Mr. Mousseau's is to spend it on colonizing French farmers, that is, the money is to be taken from the English, right or wrong, and, even at the expense of driving business from Montreal, to be used for the purpose of shouldering the English population out of the province.

THE PROTECTIONISTS OUTDONE.

The American Tariff Commission is composed almost altogether of Protectionists, and, of course, the work of gathering evidence in favor of Protection from interested manufacturers goes merrily on with little interruption. Now and again the Commission runs, however, against a stumbling block, which being totally unexpected, of course, causes them a surprising and disagreeable tumble. On Tuesday a hardware manufacturer told them that the country was being protected to death, that Protection was not only preventing foreign trade, but was restricting the home consumption of goods by making prices so high, and was, therefore, injuring the industry in which he was interested. He said that so long as the tariff existed as it was at present, the only exports would be, as at present, agricultural. The Commissioners told this "conscientious "manufacturer" that his opinions were "radical." Whereupon an American journal remarks, "But when an absurd little "brick enameller appears to ask that the "duty on his product be doubled nobody "suggests to him that the changes be suggested were radical. It is only when a "proposition to diminish a duty is made "that the proposition becomes radical." The prominent American papers which are nearly all in favor of a revenue tariff or at least of reduced protection, are chuckling "over a protection chicken that came home "to the Tariff Commissioners to roost the "other day." This chicken was a protectionist who went in heart and soul for protection on home manufactures, to the great edification of the Commission, but what was their horror when their champion went on to advocate even more eloquently and quite as forcibly the claims of home labor to be protected against foreign labor. This chicken is right; it is only fair and logical that labor should be protected directly if manufacturing capital is protected, and all that labor has to eat, wear and use is made dearer by protection.

A FLOOD OF SCIENCE.

Hugh Miller, who was a great journalist, remarked that he had never found it wise to write down to the people; that the most successful plan, as well as the most useful, was to raise the uncultured reader to the standard of the best writing he could produce. Miller's circumstances as the editor of the Edinburgh *Witness*, were perhaps unusually favorable to this conclusion. His readers were all Scotch Presbyterians of the more earnest and conscientious sort, and most of the less educated of them had little other reading than was furnished them through the pages of their paper, which they studied devoutly. The very opposite are the usual conditions nowadays. People are deluged with reading matter. Every one has for two or three cents daily enough to occupy all his waking hours, and a habit of skimming has become unavoidable. Reading has to be either trifling or exciting to command any general attention from people who have only their laziest moments for the newspaper. The temptation, therefore, is to fill papers with what is not properly food but dessert and condiment. The right course is, we think, to set the effect to be produced uppermost, and while we clothe our thoughts as attractively as possible, see that it is wholesome thought and not flummery that we are furnishing. We usually regard the more reasoned and thoughtful efforts of literature and the more serious researches of science as beyond the easy after-dinner or after-supper reading of ordinary people, and give such matter in very moderate doses. Yet, on the whole, we have always inclined to Hugh Miller's rule, and rather published something that three out of four would not read than limit ourselves to the petty events of the street and of the playground, which are much more greedily devoured by "the general." The scientific men who are here just now have gathered for the express purpose of finding an audience capable of listening to their more difficult productions. It is wise, however, even at such a time, and, we may say, even in addressing people whose comprehension of the subject is assumed, that the effect produced is likely to be in exact proportion to the simplicity of their treatment, while a very important advantage of such meetings, that of awaking the community in which they are held to an interest in science, is lost by a contrary course. Especially when public gatherings take place the material to be there presented should be broadly treated with strong lights and shades by speakers sufficiently used to public speaking to be able to utter themselves effectively and sufficiently loud to fill the hall in which they are. Audiences with social instincts kept sitting for an hour to listen to minutiæ with which, even if they could hear them, they could not burden their memories, are likely to go away with less instead of more liking for science. This is not the main effect of scientific gatherings, no community that entertains the scientific association but feels for a time at least a strong impulse in the direction of science. This invaluable result might, however, be heightened by a happier preparation of matter for the more public occasions. The *Witness* has departed altogether from its ordinary limitations in presenting to its readers during the current fortnight enormous doses of solid reading on special subjects in the hope that, for a time at least, the scientific enthusiasm might spread sufficiently to all classes of readers to lead to a spurt of scientific reading which would do good to all, and which might lead some of our younger men and women to find their mission in the reverent investigation of nature and its laws.

MARRIED OR NOT.

Notwithstanding *Punch's* celebrated advice to those about to be married, it is not implicitly obeyed, and as a consequence there is trouble in the world. Until people are educated up to this point of obedience, all that can be done to lessen the troubles which are likely to ensue, should of course be done. While the custom of getting married continues, and that will doubtless be for a very long time yet, the bond should be rigidly enforced. There are a few things of which it can be said that they should only be half done, such as an Englishman's beef, and a dyspeptic's eggs, but this will not hold with respect to anybody's marriage. People should be entirely married or not at all. We make no exceptions; all nation and conditions not only of men, but of women, are included under this rule. It is extremely awkward when a couple are only half married. When a pair, for instance, find that they are a married couple in England or America, but are not so in France it may involve great disasters. An English woman or an American woman who marries a Frenchman in her own country sometimes finds when she visits his that she is not his wife, and that even if he be willing to marry her there if he has not obtained his majority he cannot marry her according to the laws of France without his parents' consent, which is sometimes withheld. She may return to her country but when she arrives there she is a married woman again. Thus she is so far married that she cannot marry again, but she is not married so far as having a husband and a provider and protector are concerned. There is no international treaty between these countries which prevents such cases arising, and the consequence is that frauds as well as mistakes are very numerous. In these cases, too, the punishment falls upon the English or American woman and not upon the Frenchman, who, if he be a knave, is as free and untroubled, as if no law existed, which is the fact so far as these cases are concerned. Instances of the most distressing character have occurred both in England and America and will continue to occur until something is done to make the law of each land valid in the other, and that without any exceptions. This is an extremely difficult thing to do, as rigid paternal authority is so strictly upheld by French public opinion and French laws in all matters, but especially in this matter, while in England, and even more in America, paternal authority in most matters and especially in this counts for too little in the public opinion of the masses and for little with the law. The necessity of doing something is keenly felt, however, and after much discussion the question has reached the second stage in England. The Association for the Reform and Codification of the Law of nations passed at its conference held in Liverpool the other day resolutions urging upon the Government of Great Britain the importance of negotiating with foreign countries treaties regulating the marriage of subjects of different countries. Canadians have not yet had much trouble in this matter, but it is only a few months since we had a case before the court of a couple who were married according to the rites of one church, but were declared unmarried by those of another, and the latter decision, so far as it affected the religious status of the couple (a very serious matter), was upheld by the Canadian court

LIQUOR LAWS IN THE NORTH-WEST.

It should encourage and stimulate out-and-out prohibitionists, and should be a fact well considered by those who are in favor only of what they themselves call temperance, that is the allowance of the moderate use of liquor, that wherever an out-and-out prohibitive liquor law has been passed, and thoroughly or even fairly enforced, there is a strong desire on the part of the people to have it continued, or rather there is no question among them about doing away with it. The people of Maine, no matter what the people outside of Maine may think or hold, are no more in favor of upsetting the law than they are of upsetting the ten commandments. However much others may do so they do not question the enormous benefits they have received from it. Exactly the same thing is true of the people of the new north-western territories of Canada, where in the interests of the Indians a very absolute prohibition is very stringently enforced. When the Governor-General visited the North-West so stringent was the law that he had to procure leave from the Lieutenant-Governor of the territory before he could have or use liquors of any kind. At least this is the story of the English correspondents who were allowed to accompany the party. Whether true or not it at least was meant to convey an idea of the strictness with which the prohibitory law was administered in the new territories. Now that these new territories are being formed into provinces, or are being added to other provinces, and the liquor laws are in danger of being overturned, the people are sending large and numerous petitions praying that the liquor law be continued. The separate interests of the whites as well as of the Indians then demand the continuance of the law, and the good relations of the two peoples, whose interests are not identical and who are, therefore, inclined to fall out with one another if their minds be inflamed by strong drink, depend upon its continuance. In the face of the fact that public opinion is moving in the direction of prohibition all over this continent it would be folly and wickedness for the authorities to take such a backward step.

THE RIGHT OF SELF-GOVERNMENT.

A correspondent who, with a modesty characteristic of people who are imperfectly assured of their own good manners withholds his name, sends us our late paragraph about Mr. Justin McCarthy's position and writes under it the following:

It may possibly dawn upon you yet, it may possibly pierce English prejudice yet, that a community, equally with the individual, possesses a divine right—when it sees fit to demand it—to govern itself, while not interfering with the interests of others; and such a right cannot be narrowed down to a question of race, creed or faction, nor is it dependent on a Justin McCarthy or any other man for its potency. Have reason.

Supposing Staffordshire should claim Home Rule, would it be granted? Still less, if the Jews of Shoreditch were to claim home rule for the region where they are in majority, would their right be conceded. We are neither comparing the locality in the one case nor the section of the community in the other to Ireland, or to that section of its people, probably a majority, that desires home rule, but only wish to show that the claim to self-government is not so universally inherent in communities as our correspondent so courteously assumes. As to self-government in individuals it is devoutly to be desired, but not till the millennium will men be trusted entirely with the care of themselves. It was not the golden age in Israel when "every man did that which "was right in his own eyes."

ANOTHER COUNTRY INCREASING PROTECTION.

The Protectionists are entitled to all the comfort that they can draw from the fact that Russia is following her great opponent Germany as fast and as far as possible in laying heavy taxes upon imported manufactures and even unmanufactured goods. Of the forty articles which remained free of duty, twenty-five have now been placed on the tariff under heavy duties. This includes raw materials which it is apparently hoped will be raised in greater quantities at home and thus lead to the development of great resources, etc. At the same time all agricultural implements are allowed to enter free, so that in the competition for that business the Russian home industry is placed at a greater disadvantage than ever as his raw material is taxed. The tax on iron and steel vessels has been increased. Protectionists, of whatever country, appear to have a lasting spite against shipping, we suppose because it increases foreign commerce. It is significant that protective duties are always placed by a Government when they are in need of increased revenues. The United States adopted the protection tariff under war necessities, Germany under military necessities, Russia ditto, France as a result of a great war.

LIGHT IN IRELAND.

The light which began some time ago to break through the darkness which has so long enveloped Ireland is growing stronger, and spreading rapidly, and the signs are that the day is not far off. It is now found that the Land League has in some way lost the secret strength which made it such a power for evil. In fact, almost all life has left it. Here and there there are some outrages, even more dark than any which have before been committed, but it is very manifest even to those who wish the struggle to be maintained, that these are but the last desperate spasms of an expiring organization. The perpetrators of these outrages have so far lost the sympathy of the people, even of the most disaffected parts of the country, that the murderers have been unable to escape the hand of justice, as they have hitherto done. It is found that these instruments of the League, too, have always borne the very worst possible character, even among the people who form the land leagues, and that their object is now, as it has always been, to live by outrage and not by labor. The exposure of these instruments and the punishment which has been sternly dealt out to like criminals of late and which will certainly be dealt out to them will, in all probability, finally exterminate the last lingering remnants of the land league. The real strength of the land league was greatly reduced by the passage of the Land Act, and it finally perished when the Arrears Bill was made law. The tenant farmers had real grievances which gave rise to the feelings of hostility which were the strength of the movement. These tenants are probably satisfied that everything has been done for them that can be done. Lord Beaconsfield, whose political sagacity and foresight were perhaps unequalled, said at the beginning of the agitation that it would prove the most serious that had ever yet been raised in Ireland, because for the first time the Irish peasantry were aroused by the hopes of very material immediate benefits, that their selfishness was appealed to; that the hope of getting possession, without paying, of something not already theirs would sustain the movement. This has proved to be the case. Now that it is evident that there is nothing further to hope for, the tenant farmers are for the time content. Mr. Parnell's appeal to the members to sustain the organization for the purpose of obtaining home rule has not been responded to. Mr. Davitt's cry for the nationalization of the land has been received with disapprobation, and has hastened the destruction of the organization which he built up. Seeing that they have failed in their efforts to keep the Land League alive by appeals to the national feelings of the farmer, the Irish agitators, who begin to realize that their occupation is gone unless they make some new move, are now appealing to the selfishness of another class. A labor league is now being formed to take the place of the Land League. When the Irish Land Act was before Parliament it was pointed out that it did nothing for a large class of the Irish peasantry, the laborers, who were as severely ground down by the tenant farmers as the tenant farmers were by the landlords and perhaps more so. The agitators dared not insist upon the necessary amendment for the relief of the laborers, because it threatened to cause a revolt among the farmers who formed the important portion of the League, and the Government had its hands more than full with the act as it was, and did not care to risk anything by changes that could be avoided. Now that the agitators have lost the support of the farmers, they have nothing to lose and something to gain by appealing to the laborers. This movement will not amount to a great deal. It will find little sympathy and much hostility from the farmers, and besides the Government will not oppose but will rather aid any measure proposing just aid to a large class, so that the movement will not gather head to make it dangerous. It is not encouraging to the workers for Irish independence to find that the strength of their agitation dies out immediately that the hope of all purely material benefit is crushed or realized.

THE WAR IN EGYPT.

The campaign in Egypt is turning out an exceedingly uninteresting one, with so far no brilliant engagements and very little hard fighting. The only really hard and effective work done so far has been by the artillery on both sides, that of the enemy being hard enough at certain times, but never very effective. In spite of all the efforts of Arabi, which are confined to making the campaign as tedious a one as possible, the advance of the British troops toward Tel-el-Kebir has been very rapid, considering all the circumstances. The enemy have with all their artillery, and with immensely superior forces, been quite unable to check the advance of the British at any point as yet. The natural obstacles in the way of a rapid advance have been far more difficult to surmount. The marches over the deserts, the total lack of good water, and the scarcity of even poor water, the difficulties of transportation owing in part to the lack of locomotives, and also in part to the delay in procuring animals for the service, have done more for the defence of Arabi than all his men and works Although General Wolseley's force has been up to the present a comparatively weak one contending against a very large one, it has traversed more than three quarters of the distance to Tel-el-Kebir, and more than half the whole distance to Zagazig. Now that his force is almost complete, the Indian forces having at last all arrived, and with better equipments for transportation, a very rapid advance may be looked for. The native Indian troops, as was to be expected, are found to need no time to get used to the climate, but are prepared and eager to begin at once. The native light cavalry will be found very effective against the Arabs, whose favorite plan of hovering around the advancing forces, and harassing them at every opportunity, those active, wiry and untiring East Indians will be able to meet with similar tactics. A couple of regiments of these troopers rode from Suez to Ismailia, we are told, in a couple of days, or over twenty miles a day. If the Mohammedan chieftain, who recently spoke at the dinner given to General MacPherson and his staff, before leaving India for the seat of war, is not mistaken or insincere, the supply of such men who will serve loyally is practically unlimited. It appears that the British Government has confidence in the loyalty of the natives, as in case reinforcements are needed they are to be drawn from India. It is not easy to judge from the conflicting despatches which continue to be received whether the Arabs are devoted to Arabi or not. Despatches from Alexandria state that large forces of Bedouins are only held in service by fear of the vengeance of the British in case they surrendered, or of the treatment which would be meted out by Arabi to their chieftains, whom he holds as hostages. On the other hand, accounts from Ismailia are to the effect that the Arabs are fighting with a ferocity which can only be the outcome of religious zeal aroused against the British. If the Arabs are all really zealous in Arabi's cause, the war will be a serious one, but should they begin to desert when Arabi's power becomes weakened, a few weeks may see a complete collapse of the rebellion.

THE QUESTION of the credibility of faith cures has been widely discussed in the American papers in connection with incidents of the recent Faith Convention held at Old Orchard, Maine. As a rule the secular papers seem more inclined than the religious to believe that the cures, which are undoubtedly effected, are the result of faith. While such a paper as *The Christian at Work*, for instance, announces that the "so called Faith Cure is untenable, ground-"less and utterly delusive," the *New York Times* argues that if "faith cures" are all the effect of the imagination we must conceive that the imagination works miracles. The sceptic, it says, gains very little by this view of the matter. It is as easy to believe that the cripple can be cured in answer to prayer as it is to believe that he can instantly cure himself by an exercise of his imagination, and concludes, "We are shut up to a belief "in one or the other of these propositions, "and the believer in a religion miraculous in "its origin ought to have little difficulty in "deciding which one he will accept." Dr. Irenæus Prime, of the New York *Observer*, says of these cures, that they are not miracles, but so far as they encourage humble dependence on God, child-like faith in his promises, they are to be received with gratitude and not to be spoken of with levity as if they were tricks or frauds. "They are," he says, "the real "experiences of praying and believing "Christians who would not practise deceit or "make a lie." In connection with this discussion the views expressed by Dr. Cullis, of Boston, at the Faith Convention, will be found of singular interest. Dr. Cullis was the first to take up on this side of the Atlantic the work long carried on in Switzerland by Dorothea Trudel.

M. DE LESSEPS has fallen. Arabi Bey trusted the great engineer's assurances that his body and those of his sons would form an effective barricade against the advance of the British by the Suez Canal. Whether it was that M. De Lesseps did not lay out his body so as to make the best possible use of it, or whether it actually proved inadequate, certain it is that the British passed this barrier and are giving Arabi a great deal of trouble. Now Arabi thinks that he would be satisfied with M. De Lesseps' head. If his body was calculated to be good as a defence against great guns, his head Arabi no doubt thinks would make good ammunition, of which he is running short. M. De Lesseps, though willing enough to throw away his body, is not willing, it appears, to part with his head, which has so far proved the most useful part of him—when confined solely to its proper labor of working out canal schemes. Perhaps, however, it is because of inability to do so that he does not gratify Arabi's wishes in the matter. Ever since M. DeLesseps arrived at Port Said the world has been satisfied that he had lost his head. His usefulness as a mediator with Arabi Bey is gone, much to the regret of the Austrians, a boat-load of whose seamen the garrison at Aboukir captured, and refuse to give up. Austria could of course call upon the Khedive to release her subjects held forcibly in his territory, but in order to comply with the demands the Khedive would have to commission English ironclads to knock the fort about the ears of the garrison which would be rather dangerous for the prisoners in all probability.

WE HAVE BEEN a long time without hearing anything of the Tichborne claimant. There are many claimants, and will be, we suppose, as long as we have knaves and cranks among us, and some of these we have heard of recently, but of *the* claimant *par excellence* we have heard nothing of late. The death of Mr. Kenealy, his advocate, which occurred some time ago, recalled to many minds the case, and drew forth a good many regrets over the promising career which was completely spoiled by the case. It cannot be called passing strange that knaves, even stupid knaves, should be capable of enlisting lasting sympathy and most active help of many honest men. That thing is too common. The greater portion of the lower classes of England believed, and probably yet believe, that Arthur Orton is really Roger Tichborne. It is wonderful, however, that intelligent men should be so self-willed as to hold to their first opinions in such cases through life. The death of Mr. Guildford Onslow, who was one of the most prominent of the claimant's friends, has just been announced by cable. He was an intelligent man, who devoted his intelligence, a wealthy man, who gave of his wealth, and a member of Parliament who gave his time in the House to the furthering of Orton's claims. He visited America twice in the interests of the claimant. He was the last of the more prominent of the claimant's friends, Mr. Whalley, M.P. for Peterborough, having died a couple of years ago.

IT IS MARVELLOUS how much pleasure dwellers in cities can obtain and can give by the careful culture of the small amount of earth which they control. In fact a few feet well kept gives more pleasure than a large garden which is more than one has time and means to attend to. Front plots cannot always be happily used for gardening purposes on account of the too dense shade of the trees, unwholesome both for flowers and men. Even in such places constant watering will produce surprising effects, while windows can be kept in a continuous mass of bloom by changing the flowers. Where sunlight is more abundant more can be done. A resident on Dorchester street has, for a month back, made his front a joy to the whole city, and to every passing stranger, by a gorgeous growth of purple clematis, a plant which gives little trouble and makes a very large return. Back yards can also be utilized, as one would not suspect. A gentleman living on Brunswick street has by an inexpensive and judicious arrangement of sashes, made the view from the back door of his hall a vista of resplendent bloom, while at the same time supplying his family with an abundance of exotic grapes. Montreal's gardening season is short, and residents are generally away throughout the best part of it; but the paterfamilias, who is frequently left at home, might often make solitude happy by such cares as are here proposed.

IT IS DAWNING on the American people that a new question is rising into national political importance, that the question of the future is Prohibition, and that the party that adopts it will before long carry the country. No party wants to adopt it, but a large proportion of citizens are determined that there shall be no peace till it is adopted. In Canada the same question is looming into view. In the Lower Provinces, most of the counties have adopted prohibition, and only wish they could enforce it better. This they could do if they could only make the law national instead of local. In the Provinces of Ontario and Quebec, where the imperfect working of the Dunkin Act is widely known, nothing but total prohibition will awake much enthusiasm. Wherever the the Scott law is passed, it means that the people of the county which possesses it, take this means of expressing their wish for general prohibition. In the North-West Territority prohibition is absolute and effective, and is so much appreciated by the inhabitants that they are strongly demanding that when the Territory is erected into provinces provision shall be made to keep the present state of things intact.

"THE LIBERAL JOURNALS," says the *Gazette*, "are now reading Mr. David "Blain, ex-M.P., out of the party because "he had the courage to point out the de-"fects and weaknesses in Mr. Blake's "career in the leadership." Mr. Blain invited the Liberal party to throw over not only its leaders but its principles and come over to him and to success, and because it has rather scouted Mr. Blain and his proposals, it is thought silly by the *Gazette*. A party controlled by the *Gazette* would never do so. "Before many years have passed," adds the *Gazette*, "many hundreds "of prominent Reformers will require to be "read out of the party for the entertain-"ing of views similar to those expressed by "Mr. Blain." Doubtless there are those hitherto belonging to the Reform party nominally, who being manufacturers, and selfish ones, will be inclined to accept the bribe held out to them of a tribute wrung from the agriculturists. Parties must change in their materials as new issues arise, but we hope that there will always be a party in Canada intelligent and patriotic enough as a whole to espouse free trade.

THE ADVANCE of the British from Ismailia is proceeding day after day, but it is not rapid nor yet easy. Arabi is making the most of his advantages, and stubbornly contesting every point on the way to Tel el Keber, where there can be little doubt the decisive battle of the campaign will be fought. Arabi's wisdom in keeping up a desultory fight along the whole line is undoubted. Were he to stake all on one great battle, he would be defeated while the British troops were yet fresh, and before the Nile had risen enough to help him in his final defence. The hot weather and bad water are already beginning to tell severely upon the troops, both men and horses. Arabi is strong in the most effective arm for defence, namely artillery, while the British troops are surprisingly weak in this respect. The arrival of locomotives from India will enable the British to keep up their supplies from Ismailia, and will also enable them to advance more rapidly. The resistance on Friday appears to have been so stubborn that the prospects of an early finish to the campaign are less bright.

EVANGELISTIC WORK is progressing in Italy. Quite recently the splendid old church of Santa Margherita in Venice was opened for evangelical worship amid much enthusiasm, crowds of the working classes attending the services. The Patriarch of Venice preached the same day in a neighboring church a special sermon against the heretics, which was printed in full the next day in a city paper. He deplored the profanation of the old historical church, saying that no one could tell whence these evangelicals derived their doctrines, and hoped that no true son of the church would allow curiosity to induce him to enter the now desecrated building to "play with the "devil for half an hour." In spite of this warning the church was again crowded on the Friday evening when the evangelist Bernatto gave a reply to the Patriarch, making the strong point of his argument the fact that the Church of Rome has expunged the second commandment from the law of God. One of those engaged in this enterprise is Mrs. Hammond, the widow of the godly Captain Hammond who fell in the Crimea alongside of his friend Hedley Vicars.

AN EARNEST APPEAL to the people of Barrie on the subject of Sabbath observance is printed in the Barrie *Gazette*. It is signed by ten ministers whose practical care for their flocks manifested in this manner is well worthy of imitation by their brethren elsewhere. The appeal deprecates the present tendency toward pleasure seeking on Sunday and the neglect of church going and represents that the Sabbath law as part of the moral law is as binding now as it was on Israel, and that it is one of the great safeguards to health and to public morals as well as to religion. It therefore calls upon the people of Barrie in general to put every possible hinderance in the way of Sabbath profanation, and on Christian families in particular to set themselves firmly against Sabbath breaking customs and bring the young regularly to the house of God, that so the town of Barrie may become exemplary for its observance of the Lord's day. We are glad to see that the authorities at Niagara are determined to enforce the law respecting Sunday excursions, one steamboat owner having been heavily fined for breaking the law.

MCGILL UNIVERSITY and through it Montreal became last week possessed of a noble gift. The Peter Redpath Museum is one of the most classically perfect and most solidly built structures in America, and the very valuable collection which it contains, the life work of Dr. Dawson as a scientific collector is an equally noble gift which is the more appreciated the better it is understood. For the purposes of a museum the building that was opened last night leaves nothing to be desired, and it affords not only a home for the fine collection already displayed in it, but a place for future accumulations, in absence of which much that might have been obtained is lost to the public. It will be the part of the Montreal people to add yearly to the value of this splendid educational apparatus What was strikingly proved last night was that the building is not only a perfect museum but that as a place for gorgeous entertainment it has no equal. Most of those present were much impressed with this.

WE ATTACH SOME IMPORTANCE as a sign of the times to Dr. Grant's remark, in welcoming to Ottawa the American Association for the Advancement of Science, when he said Ottawa could very well have furnished them with a champagne luncheon but that the citizens of Ottawa were a progressive people and believed that teetotalism was on the winning side, they wanted the sparkle of science and not the sparkle of wine. The opinion of Dr. Grant, who holds in Canada a position which might be described as that of court physician, and who practises among the representatives of the people of all sections, is likely to be a very good gauge of public opinion generally. Certainly the pleasures of the table as indulged in since this Association met this time have been different in this respect from those of twenty-five years ago, when the same Association last met here.

IT IS A PUZZLE to many, who do not know the particulars, how a cultured and well balanced historian and statesman like Mr. Justin McCarthy can throw himself so heartily into the Irish national movement which is really not national but one of a race and a creed. The reader of Mr. McCarthy's great work, "The History of Our Own Times," would gather that the author although enough of a Celt to appreciate the aspirations and the foibles of that race was first of all a liberal English statesman of large-minded loyalty, and though we may wonder at seeing the man who denounces O'Connell as the originator of the contemp-

tuous use of the term Saxon and as the great promoter of the war of races in Ireland at the head of a sectional and race movement, his presence there cannot but secure some respect for the movement, and lead to enquiry as to what can possibly be said in its favor.

AT THE RECENT MEETING of the Forestry Congress, three extensive lumber merchants from the Upper Ottawa gave their practical experience concerning forest fires. All agreed in stating that more pine trees were destroyed by fires than were cut by lumbermen. The first said, fully more; the second said ten trees were destroyed by fire for every one cut by lumbermen. The third confirmed this last statement, explaining that the lumbermen took the larger trees, leaving the smaller ones to grow, but fire made a clean sweep. For twenty-five millions worth of lumber sold the country lost an equal value by fires. The Government dues amounted to about ten percent on all lumber brought to market, and therefore Government has a pecuniary interest to protect as well as the owners of timber licenses. Both should, therefore, co-operate in establishing an efficient forestry police.

IT NOW APPEARS that drunkenness was only one of the grounds upon which the decision of the jury which convicted Hynes was found fault with. One of the principal grounds was that, in empanelling of the jury, some men were set aside on account of their religion. This is one of the very few cases during the present trouble, in which the question of religion has been raised. The charge of drunkenness appears to have been passed over or made little of by the deputation who waited upon Earl Spencer, the Lord-Lieutenant, to pray for an investigation of the case. The Lord-Lieutenant, who, no doubt, has investigated the circumstances, is apparently satisfied that no grounds which would justify an investigation exist, and he declines to interfere with the case at all.

THE MINUTES of a meeting of striking freight handlers on the Erie Railway are worthy to be put generally on record. The strikers declare that their action was all a mistake, into which they were led by two turbulent Irishmen, and has resulted in nothing but mischief to themselves. When will workingmen learn that they are men competent to know their own interests and make their own bargains without help from bar-room loafers. When a man can find a better job he is wise in striking for the higher pay; when he cannot, he is wise in working away at what he can get. He cannot make his life much more profitable by stopping work and spending days in idleness.

A SECTION of economy and statistics has this year been opened for the first time in connection with the American Association for the Advancement of Science, which seems to attract much less attention than the comparative importance of, and popular interest in, the subjects it covers might be expected to turn to it. Few indeed can be expected to take a deep interest in the recondite arithmetical problems which perplex the actuary, or to master the mathematical law of averages, but we should think that a few papers dealing philosophically with the laws of trade would stir up an interest in this department at the present time that would make it second to none in popular interest.

EVERY EPISODE into which Mr. De Lesseps enters as an actor has more or less of a humorous aspect. But now the world saw a frantic little old gentleman, with the best of intentions, standing on the canal bank spreading out feet and arms to keep the English from landing. A few days ago he was in active telegraphic correspondence with Arabi at Ramleh, or he was dining with him at Ismailia. Anon he meets Sir Garnet Wolseley, who says, "Look here, my dear sir, there is no use in "all this fuss—it will be all over in a few "days," and the Frenchman most politely turns out his palms and says he is so sorry there has been any misunderstanding.

THE LAW being now strong enough in Ireland it is found that the sympathies of the people are, in some cases, at least, really in favor of law, and that only terrorism has made it appear otherwise. The moment witnesses dare to speak out and feel sure that the murderers against whom they give evidence will not in a week or two be at large to wreak their vengeance, the clearest evidence of crime has been easily obtained against "ten of the biggest "devils in the country," and there is joy along the whole country side at this deliverance from a brutal gang of assassins.

THE UPPER EGYPTIANS who are not in Arabi's power and who, now that the British have come, are not afraid to speak and act against him, have taken measures to prevent Arabi and his army fleeing to their country after his defeat. They have already suffered from his exactions and are not inclined to become the involuntary feeders of any rabble he may lead into their country. They do not regard him as a national deliverer, but on the contrary, as a national pest of the same kind but a good deal worse, than a plague of locusts.

ENGLAND used to be in the eyes of Europe a poor peace-at-any-price, shop-keeping country, whose prestige was gone. And Englishmen who were above shop-keeping took up the strain and sighed daily, Alas, our prestige is gone! And Lord Beaconsfield rose up and said, I will restore your prestige, and they gave him the job. Singularly, the complaints we hear against England to-day are quite of an opposite sort. We are told that never did a nation bear herself so proudly in the face of the European Congress as England is doing now.

THE SULTAN, who has a fellow feeling for mules, forbade the mules in his dominions to go to war. So it became necessary to send coals to Newcastle, or what is very like it, to send mules to Egypt from Philadelphia. Lord Dufferin, however, whose persuasive voice can move the balkiest mule, has secured the removal of the embargo, and the mules can now go and do locomotive duty on Egyptian railways until the English capture a whole locomotive or two, or get enough of them landed from England.

ITALIANS, unless they come over in numbers sufficiently great to constitute them a voting power worthy of account, will have a hard time of it in the United States, that home of the oppressed of all nations. The practical legislation of New York and Boston mobs has already given them rough notice to "go," and if Congress is true to its precedents of ratifying "hoodlum" decrees, all "furriners" will by and by share in the outer darkness beyond American civilization now enjoyed by the Chinese.

THE LANGUAGE of Syed Mahmud, a native Indian gentleman of Mahommedan creed, at a dinner given at Allahabad on the departure of the Indian contingent under General Macpherson, conveys the impression that the Mahommedans of India are as heartily loyal to England in the present war as the Canadians are and that Mahommedan soldiers can be trusted to fight for the British flag with hearty concurrence as well as with complete discipline. This is, it is true, the voice of a single person given on a complimentary occasion, but so far as it goes it is satisfactory.

IT IS NOT RAMLEH that General Wolseley has taken but Ramseh or Ramses, probably the oldest village in the world, bearing as it does the same name that it did when the children of Israel left Egypt, see Exodus xii., 37. With the exception of the River Phrat or Euphrates mentioned in Genesis, as one of the rivers of Eden, we know of no name that has continued so long. The expectation now is, as we suggested some days ago, that Arabi will make his great stand in front of Zagazig.

THE BRITISH GOVERNMENT might have retained enough of the humane spirit of Mr. Bright to prevent such atrocities in Egypt as the torturing by the native authorities of spies handed over to them by their British captors. The kindness of British soldiers to prisoners which so agreeably astonished the latter, as related in the despatches, is a happy offset to, but not a reparation of, the grievous and barbarous wrong mentioned.

WE ARE GLAD to learn from Mr. Charles Gibb, who exiled himself from the Forestry Congress in order to do greater work for the country in Eastern Europe, in the way of seeking out the hardier kinds of fruit trees nursed in climates resembling our own, that his journey so far has been a success. His letter is from Riga.

TORONTO has of late furnished several cases of drinking wives of drinking husbands being found dead under circumstances that pointed to wife murder. This is the species of benevolence which the Ontario Trades Benevolent Association, as the liquor dealers call their combination of interest, promotes.

CETEWAYO is said to be a moderate drinker and it appears from a despatch that he has increased his popularity by manifesting no sympathy with teetotalism. The London beer drinkers have found the savage not so much better than themselves as they feared, and seem to feel elated and not humiliated by the royal warrant which they have for their habits.

A MURDER NEAR OTTAWA.

MYSTERIOUS CIRCUMSTANCES—WHERE SUSPICION RESTS.

OTTAWA, August 27.—One of the most cold blooded murders ever committed in the county of Carleton took place at Gouldbourne, about eight miles from this city, last evening. The victim, Robert McCaffery, was a man of 28 years, unmarried, and lived near his father's home, quite close to which he came to an untimely end. The murdered man was last seen alive at about nine o'clock last night, about half a mile from his own home, by his servant man, who says that he passed McCaffery while the latter was in conversation with a neighboring farmer named Chester Spearman, who was also seated in a buggy, accompanied by his sister. The two were engaged in a low and apparently earnest conversation. Without speaking to either. McCaffrey's servant man walked on in the direction of his employer's house. When about a quarter of a mile distant, he was startled by a pistol shot, and shortly after McCaffrey's horse and buggy came rattling along the road, the carriage being empty, and the horse having evidently been startled by the shot. Securing the animal, the servant-man drove hastily back, and reaching the spot where he had lately seen McCaffrey, was horrified to find the body of the man lying in the centre of the road, and bathed in a pool of blood. Since the story of the murder has come out, rumors have been set afloat connecting the names of the murdered man and Spearman's sister with a scandal, and common belief is that this is what led to the murder.

ARREST OF SPEARMAN AND HIS SISTER.

Ottawa, Aug. 28.

Chester Spearman and his sister, the supposed murderers of the Goulborne farmer, Robert McCaffrey, have been arrested. The girl has made a full confession, alleging that she alone is guilty of the foul deed. An inquest was in progress this morning.

Detective McVeitty and Sergt.-Major Connors, of the Dominion Police, after arresting Spearman at his own house at Stittsville, proceeded to the residence of the latter's father and arrested Maria Spearman. The latter made a clean breast of the whole affair, and angrily said that she would murder McCaffrey over again. The latter was to have been married next month to another girl. This, it is supposed, so affected Maria with whom the deceased had been keeping company, that, bursting with revenge at the refusal of McCaffrey to alter his determination, she fired the fatal shot. Cassidy, the hired man, who passed the three conversing on the roadside, says their conversation seemed to be very serious and boded trouble. Another farmer testified to hearing the shot and a few minutes afterward seeing the accused passing at a furious rate. The prisoners are confined at Richmond until after the inquest.

ALLEGED TO BE THIEVES AS WELL AS SOCIALISTS.

A police statement is published regarding the robbery of a shoemaker's house during July in Vienna. The documents say that for a long time the revolutionary journals in foreign countries have tried to incite the working classes to the destruction of all the institutions of the State, and under the influence of these productions a section has been formed among the workingmen of Vienna, representing the principles of Herr Most. The authorities have received information that the robbery was effected by local Radicals, to increase the funds of the Associations. A portion of the stolen property was found at a revolutionary leader's house. The remainder was found at houses of revolutionary workingmen. Correspondence was also seized, by means of which other Socialists implicated were arrested. Altogether ten persons were arrested, including Penkert, editor of the Radical workingmen's paper, *Die Zukunft*. It is suspected that the robbery of Count Andrassy's palace at Buda-Pesth was planned by Socialists.

THE KEELY MOTOR.

PHILADELPHIA, August 24.—William Boekel, appointed by the Court to learn Keely's secrets, reports that while he firmly believes Keely has discovered a new and wonderfully powerful force, yet he does not yet sufficiently understand the details of the invention to explain them. He says the stockholders should not force Keely to apply for a patent.

TORONTO.

(*Special Correspondence of the Witness.*)

TORONTO, August 25.

ELECTION TALK.

There have been some rumors and events in local politics here this week. The great question at present is as to whether there will be a general election for the Province before the next session of the Legislature. A long article in the *Globe* on the issues in a provincial contest, whenever it would come off was generally accepted as an indication that there would be a Provincial election before the next session of the Legislature, but in the afternoon, the *Telegram*, which is not usually a paper honored by being made the transmitter of semi-official announcements, stated as if on authority that the writs for the Provincial by-elections would be issued this month and the elections take place next month, and that this settled the question as to there being a general Provincial election this year. It seemed as if one of the Provincial Ministers had seen what would be the general impression conveyed by the *Globe's* article, and had taken care to have that impression removed as soon possible. In the meantime Sir John Macdonald and Mr. Meredith have called a convention for the Province and no doubt when it is held the public will learn what additions are to be made to the personal strength of the Conservative party in the House. The *Mail* regards success for the Conservatives as already assured by the holding of the convention or pretends that it does, but it should remember one of its own frequent repetitions of the sentiment of a Grit orator in this city during the recent contest, when he told his friends to remember that "shouting did not win an election." This proved quite true, for although Mr. Schuck and his campaign songs awakened a great deal of enthusiasm and shouting amongst Grits more than there was amongst Conservatives and greatly annoyed the latter, they did not win the election even in the division where they had the best chance. The *Mail's* shouting now may have equally little effect on the result, although it accused Mr. Mowat and his friends of holding political meetings in the departmental buildings on Sunday, and says that it is necessary in the territorial and financial interests of the Province that he should go. The *Globe* thinks the *Mail's* enthusiasm is manufactured, and that it will not be well for the Conservative party to spend too much effort in getting up enthusiasm so much in advance.

THE ONTARIO RIFLE ASSOCIATION

has been holding its annual meeting and competition here this week under not too favorable conditions. It has generally either been raining or very hot, and wind is also complained of. There is little to report except the scores and prize takers, and it would require columns to give these. New canvas targets have been substituted this year for the old iron ones, which were considered behind the times. Associations of various kinds have been meeting here this week. If Montreal has had a Forestry Convention, Toronto has had a convention of Foresters, a subsidiary High Court they call it. It is, however, not of so much general interest, as it is less intellectual, more selfish and less public spirited in its aims and objects. However, by marching in procession through the city in their uniforms and regalias of silk of Lincoln Green color, they might send the thoughts of some back to the days of Robin Hood and his merrymen. The Association of Clerks of the County Courts, which occupy a position dealing with suits too important to be entrusted to Division Courts, and not important enough for the Superior Courts has also been in session, and has been employing itself in discussing the Judicature Act and other matters specially interesting to it. The fusion of the

GREAT WESTERN AND GRAND TRUNK RAILWAYS,

or rather the absorption of the Great Western by the Grand Trunk has been taking place here this week; as an actual practical fact, Mr. Broughton has been notifying Great Western officials to look to Mr. Hickson for instructions, although he will remain around for some months in order to effect the requisite changes in local railways, of which he has been made head, as the General Manager of the Great Western Railway, they having hitherto been worked by it. Although giving up the duties, he claims his salary for the two years unfulfilled of his engagement as general manager, a cool fifty thousand dollars, and this while he had control, and, no doubt, payment, from other roads. Truly it pays almost as well to have ability as a railway manager as to own a cotton mill in a country immediately after a high tariff on manufactured cottons has come into force. One effect of the amalgamation is that all passenger trains are to run into the Union Station, which is to be greatly enlarged—in fact, perhaps, more than doubled in capacity for that purpose. Mr. Hickson and the city authorities have not been able to agree as to plans for the new station so far, and Mr. Hannaford is to settle the matter with the Railway Committee of the City Council. The old Great Western station building is only separated from the Custom House by the width of Yonge street, and it is to be turned into a bonded warehouse, which will be a great convenience to merchants. What will not be a convenience to them is the rearrangement of the freight tariff rates promised. No doubt the changes will not be in the direction of a reduction. Mr. Hickson, however, promises what has long been demanded, that gates should be placed at the Kingston road and Queen street crossings. Perhaps the action for heavy damages, $30,000, brought against the road in connection with an accident at the former crossing, may have had as much to do with this as the greater energy manifested on the assumption of new duties by the Grand Trunk management. A morning paper has made a very pertinent enquiry as to whether the Great Western standard of efficiency or the Grand Trunk standard, which has been so much lower in the past, is to rule in the amalgamation. Certainly there has been no improvement as regards the punctual arrival of the morning mail train from the East so far, in fact it was recently three hours late, and no apology offered at that.

THE POLITICAL SITUATION IN EUROPE

STATE OF IRELAND.

NEW YORK, August 27.—The *Tribune's* London special says:—Though the past ten days record two of the worst outrages in Irish history—those at Killarney and Connemara—the operation of the Land Court and the working of the Crimes Act Commission justify the belief that Ireland is improving. These two cases show that secret societies are afraid that the peasantry will revolt against their authority, and that they are determined to inspire terror wherever there are signs of independence. Justice Lawson's death sentences on murderers, the heavy punishment of moonlighters, and the identification of ten of the assassins in the Joyce murder case, are obviously relieving Ireland from terror. The improvement may be slow, but sure. The establishment of a Labor League is regarded as evidence of the gradual extinction of the Land League. Mr. Trevelyan's excellent speeches in Ulster have increased the Irish Secretary's popularity. Earl Spencer's firm attitude toward the Dublin deputation, and his refusal to be inflicted with speeches from the Lord Mayor and others desirous of lecturing the executive, are much commended. He expressed satisfaction that no juror had been set aside in consequence of religious opinions, and promised to enquire into the conduct of the jury in the Imperial Hotel. Newspapers argue that if the jury misbehaved, Mr. Gray, as sheriff, was responsible. The feeling is still favorable toward a reduction of Mr. Gray's punishment, on the ground of its severity.

THE WAR IN EGYPT.

The *Herald* correspondent says: Public interest is centred upon the military occupations in Egypt. The occupation of the Suez Canal as a base of Gen. Wolseley's attack is considered by European military authorities as good strategy. The Germans, though critical and disposed to patronize another nation's military work, highly compliment England upon the completeness of her preparations and the excellence of the plan of campaign. Gen. Wolseley's endeavor to mystify the public respecting the departure of the fleet from Alexandria was successful. The deception of the Egyptians by false telegrams to the English papers illustrates the saying that everything is fair in love and war. Gen. Wolseley's despatch respecting Thursday's and Friday's engagements create some fear lest his self confidence may yet cause disaster. Already military opinion is questioning whether he has not withdrawn too many troops from Alexandria, thereby risking an attack by the remnant of the Kafr-el-Dwar army and increasing Bedouins from Tripoli. Gen. Wolseley's spirited advance on Cairo shows that dash continues to be the principle of his action. Germany chiefly urges the military Convention on Turkey to constitute evidence of the vitality of the Conference. Russian diplomacy continues unfriendly to England. The official view is that Russia is actuated more by a desire to ingratiate herself with Turkey, thereby annoying Germany, than by a wish to thwart Mr. Gladstone's real work. If Russian-Italian obstruction be developed in the final Egyptian arrangements, Lord Beaconsfield's example in the Berlin Congress, in destroying the San Stefano Treaty, will encourage Russia to a similar enterprise against England in the diplomatic settlement. If Turkey signs the Convention, and her forces go to Aboukir and Alexandria, such a step would justify Gen. Wolseley's denunciation. Leading Paris journals, such as the *Temps* and *Debats* support the English action. The *Temps* compares the French outcry against England to the snarling of a dog in the manger, and declares that the Anglophobists are indignant at seeing England undertake a work of real advantage to Frenchmen politically and financially. The Egyptian enterprise continues to gratify English opinion and increase Mr. Gladstone's popularity. Great satisfaction is felt in all parts of the country and among all classes of the community with the progress thus far made in the campaign, and nobody professes to entertain the slightest fear as to the result. The idea of making any further endeavor to secure Turkish co-operation is now universally deprecated. It is felt that all possible consideration has been shown to the Sultan, who gives no sign whatever of being in earnest, but, on the contrary, has done by vacillation and repeated and scarcely concealed breaches of faith, everything that lay in his power to frustrate the action of England. It is hoped, therefore, that the Gladstone Administration will not take up any firm position on the subject, and refuse to make a military convention on any terms.

MISCELLANEA.

Cetewayo's treatment of certain bores of the Teetotal Association has increased his popularity. If he cared to exhibit himself much to the public, he would become the most popular hero of the hour.

The *World's* London special says: "It is thought in well informed circles that the clemency of the Crown will be extended to Mr. Dwyer Gray as soon as it is believed a sufficiently strong lesson has been taught to the conductors of the Irish national press.

There has been a sudden change in the weather. From all points come tidings of heavy gales and rain storms. Harvest operations have been much interrupted during the week.

THE CITY OF REGINA.

NAMING THE NEW CAPITAL OF THE NORTH-WEST—A PLEASANT GATHERING.

WINNIPEG, August 24.—A telegram from Regina, the new capital of the North-West Territory, received last night, announces the completion of the Canadian Pacific Railway to Pile of Bones River yesterday morning at nine o'clock. Construction trains have crossed the site, and track-laying is now proceeding two miles beyond it. A large party assembled in Mr. Van Horne's special car and named the new city with much enthusasm. Among those present were Lieut.-Govenor and Mrs. Dewdney, the Hon. Judge Johnson, Mr. D. McIntyre, Vice-President of the Raiway; the Hon. D. A. Smith, Director, and Mss Smith, Mr. Van Horne, General Manager; the Hon. J. J. C. Abbott, J. H. McTavish, Land Commissioner; Mr. Graham, Mr. McDonald, Hudson's Bay Co.; Rufus Stephenson, Mr. Clouston, of the Bank of Montreal; Messrs. Cassells, William Stephens, Henry Nathan, the Rev. S. A. Venables, of Nice; Messrs. John Ross, of Lindsay; C. E. L. Porteous, of Lindsay; John McIntyre of Renfrew; James Wright, of the Hudson's Bay Co.; Mr. Arnit, Secretary of the Hudson's Bay Co., and Mrs. Armit; John Burns, Chairman of the Board of Directors of the Credit Valley.

Judge Johnson proposed success to the City of Regina. He said that many years ago he had filled an office in that magnificent country, resembling in some degree that which Governor Dewdney now held. Since then his interest in its future never flagged, and it gave him great pleasure to ask those present to drink success to Regina, the Queen City of the Plains. He had walked over its site in a lovely rolling prairie, intersected by the valley of a winding river, whose name will soon be forgotten under the august title which the good taste of His Excellency Lord Lorne had selected for it, and although among the numerous opinions he had that day heard, no two agreed as to the precise nature of the soil he asked everyone present to join him in wishing success to Regina, and coupled with it the name of the Lieutenant-Governor and Mrs. Dewdney. The toast was drunk with hearty cheers.

Governor Dewdney said that he had much gratification in finding that the selection of the site of the capital of the great Northwest had met with the approval of those so qualified to judge of it as those present on this occasion. He had given the subject much attention himself, and had been in some degree instrumental in making the choice, and thought it had been a very satisfactory one. He trusted they were before long to see material proof of its prosperity, and he hoped that in other years these present would revisit Regina, when he and Mrs. Dewdney trusted to be able to offer them the hospitality of their own roof, and, when he did, no doubt they would see in the development of the flourishing city an endorsement by the public of the selection made for the site of what Judge Johnson had called the "Queen City of the Plains." On behalf of himself and Mrs. Dewdney, he thanked them most cordially for the kind manner in which their names had been received.

A FIENDISH PLOT.

COLUMBUS, O., August 24.—Yesterday morning Patrolman Brachin was shown the lid of a box, at the residence of Norman Stomp, 57 Grove street, which, Mrs. Stomp stated, had been put in at the window at 9.45 the previous evening. On the lid was pasted the words: "Mrs. Stomp: The contents of this box is a nice present for you and your little boys. Draw the nail and pull the lid and behold a nice present."

If she had drawn the nail and pulled the lid she probably would have been killed or badly injured. The infernal machine contained one hundred and sixty-eight bullets, twenty-eight calibre, and fifty-six bullets of larger calibre, a pint of powder, two tin cans, one within the other, and wadding of paper, the whole so skilfully arranged as to be most effective as a dangerous explosive.

The husband came home fifteen minutes later, but said he would not open the box till morning. When he opened the top lid he did not follow directions, but went at it in a way which indicates that he could not have improved on his method if he had known all about the contents of the machine. There is a suspicion in that direction.

TERRIBLE RIOTS BETWEEN MOHAMMEDANS AND HINDOOS—SHOCKING ATROCITIES BY HINDOOS.

CALCUTTA, August 28.—Dreadful rioting between Hindoos and Mohammedans occurred at Salem in Madras. 150 Hindoos and Mohammedans were arrested. An eye witness saw the disembowelled body of a Mohammedan infant lying on the ground with the arms torn off. The headless corpses of Mohammedan men and women were lying on every side. The Mohammedans' houses were burned and the principal mosque almost razed. Dead pigs were thrown into wells with the corpses of Mahommedan children. The troops are still patrolling the streets. The Mohammedans are a small minority of the population.

ACCIDENT ON THE BEAUHARNOIS CANAL.

VALLEYFIELD, Aug. 25.—About two o'clock this morning the propeller "Lake Ontario" had just passed through the seventh lock when the steamer "Prince Arthur," of the American line, ran into the lower gates of the lock before the upper ones were closed, thereby letting the whole volume of water in the six mile level pass through unchecked. Three of the gates are broken, and a large force of men are busy repairing the damage. Navigation will be stopped for three days. Steamers and barges are arriving from the West, but will be detained at the head until the repairs are completed. A number of farms near the foot of the Canal are flooded, and the grain swept away. The canal has since been repaired.

FIRES.

HALIFAX, N. S., August 25.—A fire broke out at Moir's Mills, Bedford, to-day, in the drying room attached to the box factory, and spread with lightning rapidity to the adjoining buildings. In half an hour the box mill, spool factory and saw mill were destroyed with all their contents, the workmen having barely time to escape. Loss estimated at $40,000. Insurance about half that amount. The elevator and grist mill were saved. Insurance losses, as far as ascertained, are:—Citizens, $2,000; Queen's, $2,000; Phœnix, $2,000; Quebec, $2,500; Commercial Union, $6,500; Sovereign, $3,000.

TEXAN FEVER SPREADING.

AUBURN, N.Y., August 26.—Three more cattle afflicted with Texan fever died to-day at Sennett, and the disease continues to spread. The Sheriff has telegraphed the Governor that the most stringent measures must be taken to stamp out the disease.

WEEDSPORT, N.Y., August 27.—Seven more cattle died on Saturday of Texan fever. The ticks which accompany the disease are being found in many fields in the vicinity of the infected pastures, and farmers are seriously alarmed. There is much dissatisfaction at the dilatoriness of the State officials.

THE WAR IN EGYPT.

(*Continued from first page.*)

THE MISCHIEF-MAKING RUSSIAN AMBASSADOR.

Reports continue to attribute to Count Nelidoff, Russian Ambassador, an anti-English policy, under which he has repeatedly urged on his colleagues that England must submit to the Conference the results of her Egyptian campaign, and justify her adhesion to the protocol proclaiming the individual disinterestedness of all the powers.

The British Embassy have lately received advices from Erzeroum that the Russian authorities are making large purchases of wheat to be stored at Kara.

M. DE LESSEPS ON THE MAN WHO WANTS HIS HEAD.

PORT SAID, August 26.—In conversation today, M. De Lesseps said he still considered Arabi Pasha a noble patriot, and felt happy that he had had a great share in preventing France from participating in an adventure that he believes will have more disastrous consequences than the French expedition to Mexico could. He believes the campaign will be long, and that the English will encounter determined resistance.

PORT SAID, August 27.—M. De Lesseps has embarked for Marseilles.

THE QUEEN.

LONDON, August 26.—The Queen is greatly gratified at Gen. Wolseley's success, and heard with thankfulness of the Duke of Connaught's safety.

HELP FROM ABYSSINIA.

It is stated that King John of Abyssinia is now on the frontier of his own kingdom with a body of troops in the hope of encountering his old enemies the Egyptians, now led by Arabi, and of rendering such service as may induce England to restore to Abyssinia some direct access to the seaboard.

REINFORCED.

ALEXANDRIA, Aug. 28.—During the night Kafr-el-Dwar was considerably reinforced.

MANDARA SHELLED.

LONDON, August 28.—An Alexandria despatch says the ironclad "Minotaw" successfully shelled the enemy out of Mandara between Ramleh and Aboukir.

A DEMORALIZED CAMP.

ISMAILIA, Aug. 28.—The troops are continually advancing. It will not be long before Tel-el Kebir is attacked. Between Ramses and Maxama the ground is good for marching, but the canal is full of dead horses and Arabs. Some of the latter were thrown there by their comrades and others were shot while attempting to escape. Judging by the quantity of clothing, &c., found in the camp, the rebels must have been in great force, but most of them appear to have been merely peasantry armed with old muzzle loading muskets. Almost all the prisoners and all the dead were peasants. The doctors prohibit the use of the water of Lake Maxama for drinking. The Artillery General has been captured who speaks English fluently. He has furnished valuable information.

EFFECT OF THURSDAY AND FRIDAY'S FIGHT.

LONDON, Aug. 28.—Gen. Wolseley telegraphs from Ismailia: "I have just returned from the outposts and find our action of Thursday and Friday had far more important results than I was aware of yesterday. The enemy were completely routed and fled toward Zagazig, throwing away their arms and accoutrements. A very large amount of camp equipage and munitions was captured. Mahmoud Fehmy, Arabi's Chief Engineer and Military Adviser, is a prisoner in my camp."

THE KHEDIVE'S COMMISSIONER.

ALEXANDRIA, Aug. 28.—Sultan Pasha, attended by Fuad Pasha and 12 subordinates, start to-day to accompany Gen. Wolseley as the Khedive's Commissioner, to explain to the population of the districts through which the British pass that their mission is solely to re-establish the authority of the Khedive, and overthrow the military despotism.

THE DUKE OF CONNAUGHT.

General Wolseley telegraphs on August 25: The Guards under the Duke of Connaught made a very trying march yesterday across the desert. They were well handled by him.

SOUTH AMERICAN AFFAIRS.

Panama advices to August 17th say that late reports confirm the statement that a general rising of Peruvians against the Chilians was plotted. It was to occur on July 28th. The Chilians, being apprised of the matter, searched a steamer on arrival at Callao. Full plans are said to have been discovered on some of the passengers, and the plot was frustrated. Some Italians were to take part in it. It is reported that Esmeraldas, Ecuador, has been captured by rebels. The report has its origin in the fact that the Government declared Esmeraldas blockaded. The probabilities are that the measure has simply been taken in order to prevent disaffected people communicating with the rebels.

Chilian surveyors have been ordered to examine the natural territorial divisions which appear most suitable for Chili to accept as her northern boundaries as modified by the war.

The provision crops of San Salvador, Honduras and Nicaragua almost failed this season, and there is much suffering experienced. The Governments are purchasing corn and rice abroad and abolishing the import and other duties.

A mine caved in at Mejillones; fifteen men were killed.

A DISASTROUS WATERSPOUT.

ALEXANDER, Texas, August 26.—A waterspout caused the head of Bosque Creek, above Stephenville, to overflow, destroying property amounting to from forty to one hundred thousand dollars. Mrs. Hart was drowned, the house being dashed to pieces. Other families were saved by climbing on roofs and trees. The water has subsided.

COME DOWN OF A FAMOUS FEMALE SPY.

PHILADELPHIA, Aug. 28.—It is alleged that Belle Boyd who gained notoriety as a rebel spy during the war has been engaged in various swindling operations here. She was arrested for uttering a forged cheque on a pawnbroker but released.

JACQUES CARTIER ELECTION.

LACHINE, August 27.—Hon. Mr. Mousseau's majorities are as follows:—Lachine, 23; Point Claire, 41; St. Genevieve and Ile Bizard, 111; St. Ann's, 53; St. Laurent, 136. Total, 364.

CRIMES AND CASUALTIES.

SMITH'S FALLS, August 26.—On Thursday, the 24th instant, Wm. Lawson, of Lombardy, was instantly killed by falling on a fork off a load of grain. His fork fell down and in jumping after it he fell, the fork entering his body. He only lived fifteen minutes after the accident.

SHERBROOKE, August 22.—At about 3 o'clock on Monday afternoon as the freight train on the Quebec Central Railway from Quebec was about three miles this side of St. Frederic, it ran over Malvina Gagne, a young woman aged about 20 years, whose parents reside about four miles this side of St. Frederic. It appears that she had stepped in front of the approaching train in order to rescue her dog when she was overtaken and thrown from the track, one of her legs being broken by the cowcatcher, besides sustaining other injuries. She was conveyed home and surgical assistance summoned. At 10 p.m. Drs. Jaquin, of St. Frederic, and Taschereau, of St. Joseph, amputated the broken limb, but the patient only survived the operation about an hour.

SHERBROOKE, Aug. 24.—Joseph Widger, of Ascot, was found dead in his house on Tuesday morning. From the evidence at the coroner's inquest it was found that he had worked in the hay-field on Monday, and that in the afternoon a couple of miners had visited him, bringing with them a bottle of gin, which was consumed between the parties and a fresh quantity of three bottles procured, from which the deceased with his companions freely imbibed. He then laid down on the floor, and was found dead by his wife at an early hour on Tuesday morning. Deceased was about forty years of age, and leaves a wife and five children.

TORONTO, Aug. 25.—Mary Ann Bibby, wife of James Bibby, a laborer, living on the Kingston road in Leslieville, was found dead in her bed this morning. There were bruises on her body, the cause of which, whether a fall or a beating, has not yet been clearly shown. Her husband, who was arrested, admitted having slapped her in the face with his open hand. He says his wife was a hard drinker. An inquest was held last night and adjourned, Bibby being remanded to gaol in the meantime.

WINNIPEG, August 25.—A terrible drowning accident took place at Shot Lake on Sunday, the 20th instant. Edward Wainwright, aged 19 years, and lately employed with Mowatt Brothers there, Nelson Ryan, aged 21, son of Thos. Ryan, and Geo. Stephenson, tried to cross the head of the lake, and when nearly across, their small boat was swamped in the heavy waves. Thompson could not swim, and was helped on the boat by the others, who, being good swimmers, struck out for shore, which they nearly reached. Wainwright and Ryan were, however, drowned.

COMMERCIAL.

WITNESS OFFICE, August 29.

THE STATE OF TRADE.

The Agricultural, Forestry and Science Congresses having during the past week engrossed the attention of most people of the city, and not a little of the attention of business men has been given to the proceedings. Although the present is a busy season with our wholesale merchants, yet during a week or so more there has been a slight lull, so that business has not suffered at all. This year the business of the wholesale houses opened very early, so that the first rush of getting in goods, placing, taking orders and executing them has been got over pretty early. On the other hand the season has been a backward one for farming operation and consequently the harvesting operations are much later than usual. Thus farmers have not had time to visit the towns and cities, and the business of the retail trade has as yet been small. Their stocks are therefore yet pretty large, and they do not yet feel like buying very much more in addition to what they have ordered from travellers. This accounts for the lull in the trade here at present. The prospect for the fall trade continues very good, however, the crops having been garnered in much better condition than it was expected a couple of weeks ago they would be. The matter dealt with by the various congresses have, as a general rule, a very special interest in most of our business men, whose interests are of course greatly dependent upon the welfare of our forests and our farms, and upon the march of science.

In Dry Goods a quiet business is being done. Stocks are now in readiness for inspection by purchasers, and they are very complete and well assorted. A fair number of purchasers are at present in the city, but it will be a couple of weeks before the arrivals became very numerous. There is no change in values in any department, and no special feature to note. There are no payments of any importance coming due at present, and as this is not a busy season with retailers, remittances are not very numerous, still they are not unsatisfactory for this season of the year.

Of the wholesale trade of Toronto, the *Globe* of yesterday, in its weekly review, says:

Nothing of importance has occurred in the wholesale branch of trade during the past week that needs to be reported. The work among wholesale houses has been one of preparation rather than of performance; but on all hands is heard the assurance that the business promising for this season will be large and safe. Most of the houses have their travellers out, and reports so far are encouraging, and confirmatory of the idea with which they set out. On all hands, however, it is expected that during the time of the Exhibition here a large amount of orders will be left in the city. Stocks were never in better condition, and buyers will have no trouble in making purchases. Actual shipment of goods has been light up to the present time, but everything is in readiness. There is one disturbing element in estimates this season. The freight rates on the Amalgamated Grand Trunk and Great Western Railway routes west of Toronto are to be adjusted immediately; and the commercial community is yet in doubt what will be the character of that adjustment, and whether it will change the existing rates, and if it does so, to what extent. This circumstance will not affect business as regards the extent of the transactions.

There is no change to report in the iron and hardware trade since our last review. There seems to be rather more justification for the course of consumers in holding off, for pig iron shows a tendency in the British market to weakness. Warrants are cabled this week lower at 49s 9d, or a decline of 9d since this day week. Here the market is, however, steady, holders being, as a rule, firm in their prices for spot. A few small lots have been sold at former prices. Gartsherrie and equal brands $22.50 to $23.00; Summerlee, $22.50 to $23.00; Calder, $22.00 to $22.50; Eglinton, $20.50. The demand for bar iron is quiet, but the prices firm at $2. Sheets are steady. Tin plates are in fair demand at $5.25 for charcoal; cokes dull at $4.50. Canada Plates are firm, but dull, at $3.10 to $3.25. Ingo Tin is cabled weaker from Great Britain, but there is no change so far in this market at 26c to 26½c. Ingot Copper unchanged, at 18c to 19c. The general hardware trade is fair for this season, and values are unchanged.

There is some improvement in the wholesale grocery trade, but in some of the principal departments business is still very slow. There is very little doing in teas at present, though prices are steady. Sales of medium Japan are reported at 37½c to 42c. There is some demand for low grade Japans at 16c to 18c per lb. A sale of a round lot is reported at 16½c. The sugar trade shows some improvement. Cargoes of Barbados and Porto Rico have sold at 7c to 6½c, and a lot of Jamaica at 6¾c. There have been sales of granulated at prices a shade lower than ruled last week; 9½c to 9¾c being the range. Crushed 9c to 9½; powdered 10½c to 11c; yellow 7c to 8½c as to quality. Molasses have sold at 52c to 53c for round lots of Barbodos and 56c for small lots. Coffee is moving fairly for the local trade at 16c to 20c for good to fine Java, 22c to 26c for choice. Mocha, 31c to 32c; Maracaibo, 11c to 15c; Jamaica, 10c to 12c; Plantation Ceylon, 18c to 20c. Fruit prospects are good, owing to fair crops. Pending the arrival of new fruits little is doing. Spices are scarce and in demand at 15½c to 16c for black pepper, and 24c to 26c for white. Cloves, 26c to 30c. Rice, $3.60 to $3.75. Oils are quiet at 72½c for Steam Refined Seal; Pale Vat, 66c to 67½c per Imperial gallon; Straw 60c. Cod "A," 62c to 62½c for Newfoundland, and 60c for Halifax. Olive oil, 83c to 85c. Raw Linseed, 56½c. Petroleum is quiet at last week's prices; car lots, 18¼c; part cars, 19c to 20c; single barrels, 20c to 21c.

There is a stronger market for Western Hides at $10 to $10.50; Green Butchers unchanged at for No. 1, $9; No. 2, $8; No. 3, $7. Calfskins, 14c per lb. Lambskins, 65c to 75c.

The wool market is quiet at 18c to 19c for Greasy Cape. Australian scarce and nominal. Canada wools are nominal in this market. A super lamb is quoted at 31c to 33c; B super 29c to 31c; unassorted, 26c to 29c, according to grade and length. Unassorted sheep at 26c to 28c.

There has been a fair amount of business done on the Corn Exchange during the past week of a small jobbing character, which is about all that is done here now. The local receipts of flour by railway and canal for week ending 23rd August, 11,447 brls. Total receipts from 1st January to the 23rd August, 484,491 barrels, against 505,330 brls. at corresponding date in 1881, being a decrease of 20,839 brls. Local shipments for week ending 23rd August, 21,979 brls. Total shipments from 1st January to 23rd August, 461,068 brls., against 352,478 brls. at corresponding date in 1881, being an increase of 48,590.

The local receipts of wheat by railway and canal for week ending 23rd of August, 237,368 bushels. Total receipts from 1st of January to 23rd of August, 4,167,980 bushels against 3,724,569 bushels at corresponding date in 1881, being an increase of 413,411 bushels. Local shipments for week ending 23rd of August, 488,751 bushels. Total shipments from 1st January to 23rd August, 3,300,345 bushels, against 3,448,803 bushels at corresponding date in 1881, being a decrease of 148,359 bushels.

The local receipts of butter for the week were 479 packages, and the shipments 1,381 packages. The local receipts of cheese were 39,902 boxes, and the shipments 40,702 boxes.

LEATHER.—A steady business is being done at prices within the range of our quotations. The improved tone noted last week is maintained, but no perceptible advance in prices has been realized during the week. The general tendency of the market is upwards, but stocks are still heavy and buyers have no difficulty in placing their orders satisfactorily.

Hemlock Spanish Sole, No. 1 B.A.	25	to	26½
do do No. 2 B.A.	22	to	26
No. Ordinary Spanish	25	to	22½
No. 2 do	22	to	23
Buffalo Sole No. 1	21	to	21
do No. 2	19	to	28
Hemlock Slaughter No. 1	26	to	36
Waxed Upper, light and medium	32½	to	34
do do heavy	32	to	36
Grained	32	to	28
Splits large	21	to	23
do small	16	to	22
Calfskin (35 to 40 lbs)	65	to	75
do (25 to 34 lbs)	60	to	70
Imitation French Calf	80	to	85
Sheepskin Linings	25	to	50
Harness	24	to	34
Buffed Cow ℔ foot	13	to	15
Enamelled Cow "	15	to	16
Patent Cow "	15	to	16
Pebbled Cow "	11		15
Rough "	22		27

LONDON MARKETS.

LONDON, Aug. 28.—White Fall Wheat, per cental, $1.60 to $1.80; Red, $1.70 to $1.80; Oats, new, $1.25, old, $1.40; Corn, $1.80; Peas, $1.25; Rye, $1.25; Wool, 20c; Potatoes, 40c to 50c per bush.; Apples, $1.40 to $2 per bush., Hay, $8 to $11 per ton.

WHOLESALE PRICES.

The Chicago wheat market reacted slightly to-day from the strong prices which ruled on Saturday. No. 2 wheat is quoted to-day at $1.02 August, 98⅛c to 98⅜c September, 97⅛c to 97⅜c November, and 97¼c year. The receipts were 121,000 bushels and the shipments 77,000 bushels. Corn was also about 1c per bushel cheaper at 76c August, 74¾c September, 73¾c October, 70¼c November, and 65⅜c year. The receipts were 218,000 bushels and the shipments 328,000 bushels.

The local grain market is quiet and values are mostly nominal. Canada White Winter wheat is quoted at $1.16 to $1.18; Canada Red, $1.30 to $1.35; Canada Spring, $1.20 to $1.23. American wheat to-day would cost about $1.17. Corn, nominal. Peas, about 95c per bush.; Oats, 47c to 48c; Barley nominal, no business expected till next month. Rye, 71c to 72c.

FLOUR.—The market is, if anything, rather easier, though the sales reported would indicate an opposite condition of the market. Spring Extras are offered freely at $5.55, though sales are reported at prices 15c above that figure. On 'Change to-day: 100 brls. Superior Extra was sold at $6.10; 125 Extra at $5.80; 150 at $5.70; 125 Spring Extra, $5.70; 125, $5.75. Quotations unchanged: Superior Extra $6.05 to $6.10; Extra Superfine, $5.70 to $5.75; Fancy, nominal; Spring Extra, $5.60 to $5.65; Superfine, $5.00 to $5.00; Strong Bakers', Can., $6.50 to $6.75; do., American, $7.50 to $8.05; Fine, $4.00 to $4.25; Middlings, $3.80 to $4.00; Pollards, $3.50 to $3.75; Ontario Bags, medium, $2.80 to $2.85; do., Spring Extra, $2.70 to $2.80; do., Superfine, $2.50; City Bags, delivered, $3.50 to $3.60.

MEALS.—The market is unchanged. Ontario Oatmeal sells at $5.65 to $5.75 per brl. Cornmeal, $4.25 per brl.

DAIRY PRODUCE.—Butter—The market is in a state of extreme depression, and old country buyers seem to be very indifferent about handling at all just now. We have seen several letters from Glasgow, Bristol and London, and the gist of them all is that as Irish butter is so cheap, and "butterine" has lately been so greatly in vogue as a substitute for the inferior makes of the genuine article, buyers there cannot touch Canadian make, except of the very finest quality, unless prices are lower. From the information we have received through these letters, Western must be bought by shippers at from 12½c to 16c to give them any show at all, and whatever prices may have been obtained in a semi-retail way for Western, in order to influence large orders purchases will need to be made on about the above basis. We quote:—Creamery, 20c to 21½c; Eastern Townships, 18c to 20c; Morrisburg and Brockville, 18c to 20c Western, 12½c to 16c, with about two cents more than these prices for the jobbing trade. Any sales made above our quotations are of a retail character, and are no criterion as to the state of the market for shipping purposes. Cheese is quiet, and it seems as though Englishmen did not intend to buy any more until they get September make, and, if that be so, August will probably have to be sold at moderate prices. We quote: 10c to 11½. The exports for last week were considerably in excess of those of the week previous, the shipments being—Cheese, 43,328 boxes; and butter, 2,409 packages; against, Cheese, 35,934 boxes; and butter, 1,008 packages.

EGGS are steady at 21c.

HOG PRODUCTS are unchanged:—Western Pork, $24.50 to $25; Canada Short Cut, $26; Inspected Canada Mess, $25 to $26; thin Mess Pork, $23 to $23.50; Hams, city cured, 15c to 15½c; do. canvassed, 16c to 16½c; Bacon, 14c to 15c. Lard, in pails, 15c to 15½c.

ASHES.—Pots are strong at $5.05 to $5.15. Pearls, $7.50.

MONTREAL STOCK MARKET.

(*Furnished by Macdougall Bros., brokers.*)

MONTREAL, Aug. 28.

Bank Stocks.	Par value of shares.	Amount paid up.	Seller p.c.	Buyer p.c.	Cash Value
Montreal	200	all	212	211¾	......
Ontario	40	all	127½	126	......
Du Peuple	100	all	90	89	......
Molsons	50	all	132	130	......
Toronto	50	all	193½	192½	......
Jacques Cartier	100	all	118	......	......
Merchants'	25	all	130¾	130¼	......
East. Townships	100	all	......	120	......
Commerce	50	all	144¼	143¾	......
Union	50	all	96	95	......
Exchange	100	all			......
Miscellaneous.					
Montreal Telegraph, x d	100	all	133½	133	......
Dominion Telegraph	50	all	......	......	......
Rich. & Ont. Nav.	50	all	76	75⅝	......
City Passenger Ry	100	all	157	156½	......
Mont. Gas Co.	50	all	186¼	186	......
Loan & Mortgage	40	all	......	......	......
S. P. M.	100	30	147	146	......
Canada Cotton	50	all	140	135	......
Dundas Cotton	100	60 p.c.	......	......	......
Montreal Cotton Co.	200	all	150	147	......
Canada Shipping	100	30 p.c.	......	......	......
S. P. M.		all	......	......	......
Hochelaga		all	......	......	......

FARMER'S MARKET—Aug. 25.

The attendance of farmers was not large, owing to their being still engaged harvesting the crops. Oats and potatoes are consequently not so plentiful, and prices have advanced a little. Butter and eggs are coming in more freely and have fallen in price. Tomatoes, which promised to be a large crop, are not ripening as fast as expected, and the same may be said of potatoes. The cause is attributed to the recent rainy and cool weather, but now that warm weather has set in again things will improve fast. The prices are as follows:

Oats, $110 to $1.25 per bag; buckwheat, $1.20 to $1.30 per bag of two bushels; peas and beans were not offered. There is no change in flour, meal and feed worthy of note. Roots and vegetables are in demand. Potatoes, 75c to 80c per bag; cauliflowers scarce at $1 per dozen; cabbages, 20c to 40c per dozen; melons, 50c to $1 each; cucumbers, 20c to 30c per dozen; tomatoes, 25c to 30c; sweet corn, 20c; celery 25c to 30c. Small fruit is becoming scarce; red and white currants, 50c per gallon; black, 50c to 60c; blueberries, 35c, and 75c to 80c per box of ten quarts. Montreal apples, $4.00 to $5.00 per barrel; United States and Western Canada apples, $2 to $3.25. Bell pears, $5.00 to $6.00. Peaches, $2.50 to $3.50 per box, and 20c to 30c per dozen, according to size; lemons, new crop, $5.00 per box of 40 dozen small sized ones, and 30c to 40c per dozen. Fresh butter, 25c to 27c per pound; salt, 20c to 23c; fresh eggs, 23c to 25c per dozen; packed 20c. Beef, 12c to 13c per lb. for roast and 7c to 10c for the lower grades; mutton, 8c to 10c; lamb, 10c to 11c; pork, 12c to 13c. There was only one dressed hog on the market and it sold at $9.50 per 100 lbs. Chickens and poultry generally are scarce. Fish scarce; fresh mackerel, 12c per lb; halibut, 15c; salmon trout, 10c; haddock, 6c. Hay and straw remain without change since last week's quotations.

THE CATTLE MARKETS.—

The demand for beef cattle was brisk at a slight advance on last week's prices. Most of what was offered at Point St. Charles was sold at 6c to 6¼c per lb live weight. The shipments to the English markets are considerably larger than last week. Viger market was well supplied with butchers' cattle which sold at from 4c to 5c per lb live weight, and a few extra good ones changed hands at 5½c. The usual supply of the lower grades sold at 3½c to 4c, and some at from $16 to $25 each. There were 100 calves sold at from $3 to $10 each according to quality; lambs were offered at $2.50 to $5 each; sheep $5 to $7 and one lot $8 each. A few live hogs sold at 7c per lb live weight, but they were not very choice.

Milch cows were more plentiful and in better demand than on last market day. There were thirty-five on the market, the best selling at $52.50, and a few good ones were offered at $50 each, but not sold at noon to-day. Several varying in price from $20 to $35 each changed hands.

LIVERPOOL PROVISION MARKET.

CHEESE have been in good demand, and holders have been able to obtain an advance of 1s to 1s 6d per cwt. over last week's prices for finest parcels. We quote finest Colored at 56s to 57s 6d, and finest White at 58s. There has also been a very fair demand on lower grades at 20s to 40s, according to quality. The market closes firm.

BUTTER.—There is no change to report, and the demand for American and Canadian is only trifling. A few lots of Canadian have been sold at 95s to 100s; lower grades are quite neglected.—*Hodgson Brothers' Circular, 12th August.*

OTTAWA MARKETS.

OTTAWA, Aug. 29.—Market quotations keep steady in almost every line, new fall wheat and rye are the latest appearance in the grain department, large quantities of fruit are offered; prices are somewhat higher. The following are principal quotations: Flour, No. 1 brand, per bbl., $6.25 to $6.50; Fall Wheat, $1.70 per bushel; Spring Wheat, $1.30 do.; Oats, 45c do.; Dressed Hogs, per cwt., $9; new potatoes, 90c to $1 per bushel, per bag $1.10 to $1.25; Butter, in pails, 18c to 19c per lb.; Eggs, 19c to 20c per doz.; Beef, per cwt., $7.50 to $8; Hay, per ton, $10 to $12.

TORONTO MARKETS.

TORONTO, Ont., August 26.—Wheat—Fall No. 2, $1.14 to $1.15; No. 3, $1.12 to $1.13; Spring No. 1, $1.21 to $1.22; No. 2, $1.19 to $1.20. Barley No. 2, 87c; No. 3, Extra, 82c to 83c; Peas, No. 2, 81c to 82c; Oats, No. 1, 60c; Flour—Superior, $5.35 to $5.40; Extra, $5.30; Bran, $13.00; Butter, 13c to 19c. Market quiet. Flour inactive but steady at quotations. Bran easy and sold at $13. Wheat quiet; Fall unchanged; Spring scarce and firmer, with $1.20 paid for No. 2. Oats easier; new to arrive this week sold at 55c. Barley sold on street at 75c. Peas nominal. Butter inactive, buyers and sellers apart for shipping lots. Eggs steady at 16½c to 17c.

HAMILTON MARKETS.

HAMILTON, Ont., Aug. 26.—White Wheat, new, per bush., $1 to $1.08; old, $1.12 to $1.14; Treadwell, new, $1.00 to $1.08; old, $1.12 to $1.14; Red Winter, new, $1.05 to $1.10; old, $1.15 to $1.18; Spring, $1.15 to $1.18; Pease, 70c to 80c; Barley, 60c to 65c; Oats, 58c to 60c; Corn, 90c to 92c; Clover, $4.30 to $4.50; Timothy, $2.50 to $2.60; Potatoes, 50c to 55c; Apples, 80c to $1.00; White Wheat Flour, $5.70 to $5.90 per barrel; Strong Bakers', $5.75 to $6.00; Butter, in rolls, per lb., 18c to 22c; firkins, 15c to 18c; Eggs per doz., 16c to 17c; Dressed Hogs, per cwt., $8.50 to $9.

CHATHAM MARKETS.

CHATHAM, Ont., August 28.—Fall Wheat, White, new, 95c; Fall Wheat, old, $1.00; Fall Wheat, Red, new, $1.00; Fall Wheat, Red, old, $1.10. Corn, 85c. Oats, 40c.

(*Continued from Page 7.*)

ecography, archæology, and archæonomy, and for modern anthropology, series of four terms beginning with the words: Biogeny, psychogeny, glossogeny, ethnogeny, technogeny, sociogeny, and mythogeny. For the study of the relations between man and his environment, the speaker adopted the three terms, hexiography, hexiology, and exionomy. Each of these points was elaborated and illustrated by detailed descriptions.

A SCHEME OF ANTHROPOLOGY.

Genos.	*Graphe.*	*Logos.*	*Nomos.*
Anthropogony	Anthropography	Anthropology	Anthroponomy
Archæogony / Biogeny	Archæography / Biography	Archæology / Biology	Archæonomy / Bionomy
Psychogony or Phrenogeny	Psychography or Phrenography	Psychology or Phrenology	Psychonomy or Phrenonomy
Glossogeny	Glossography	Glossology	Glossonomy
Ethnogeny	Ethnography	Ethnology	Ethnonomy
Technogeny	Technography	Technology	Technonomy
Sociogeny	Sociography	Sociology	Socionomy
Mythogeny	Mythography	Mythology	Mythonomy
Hexiogeny	Hexiography	Hexiology	Hexionomy

Instrumentalities of research.

THE CROSS AND THE CRUCIFIX.

Col. Charles Whittlesey read a paper on "The Cross and the Crucifix." He called attention to the differences between the cross, as a religious symbol and the Roman crucifix. The early Christian churches had the upright extending above the cross-piece. The Greeks had the four arms nearly equal. St. Anthony's cross is like a capital T, with a short cross-piece. The Maltese cross has hardly a right to the name. It has been said that the T shaped cross dates from before Christ, and had more to do with licentiousness than a deified principle of life. A T shaped figure has been found in the ruins of Yucatan. There is no direct proof that this cross had to do with worship. There are figures like crosses on inscribed rocks in the United States: their value cannot yet be determined.

DISCOVERIES IN VERMONT.

Prof. G. H. Perkins gave an interesting notice of a collection of Sioux articles in Vermont, including weapons and some most remarkable dresses of solid bead-work.

Prof. Perkins also gave an account of the discovery of rude flint implements buried in the soil in Vermont. The great value of this collection is not the form or number of the objects, but the fact that Vermont is one of the poorest States in the Union for archæological finds. Prof. Perkins, among other objects, exhibited the only utensil made of deer antler that has been found in the State.

INDIAN STONE GRAVES IN ILLINOIS.

This, by Charles Ran, was the only paper read in the afternoon in the section of Anthropology. Dr. Ran claims that the stone graves, so called, of the Mississippi Valley, need not be very old, but that they were still constructed in the present century. Those graves found by Dr. Wislizenus were of limestone flags, in burying grounds of 20 to 100 graves each, buried about a foot deep. They contained, beside skeletons, pointed flints, stone tomahawks, bone implements, sea and river shells, and pottery showing more skill than possessed by the present Indians. The skulls are referred, some to the Toltecan family, or the formerly half-civilized race, some to the "American" family. Dr. Wislizenus believes that Florida and the Mississippi Valley were occupied by the Toltecs after or before their dispersion from Mexico. This custom of burying was not known among the Indians when the whites came into Illinois. The present writer in 1861 saw a stone grave near Columbia, Illinois, which had contained the body of an Indian whose murder was still remembered by the old farmers. Dr. Shoemaker, on whose farm it was, had buried the skull out of sight, and could not find it, so the race cannot be determined. The writer knew of no stone-grave burials by modern Indians, but John D. Hunter, who lived many years among the Kickapoos, Kansas, Osages and other Indians, tells of some who lay the dead between upright flagstones, cover with the same, and heap earth over all. Dr. Ran thinks that the stone graves were made by the race inhabiting that district within or before historical times. They were probably suggested by the ease in obtaining the flat stones to protect the bodies from animals.

SECTION I.

COLLECTING STATISTICS BY MAIL.

The section of Economic Science and Statistics met under the presidency of Prof. E. B. Elliott, Washington, President of the section. After routine, Mr. Chas. W. Smiley, Chief of the Division of Publication and Statistics in the United States Fish Commission, contributed a paper on "Notes upon some methods and results of collecting statistical matter by mail." Statistics, he remarked, are in disrepute with some people because they have ascertained that figures can be made to lie, and to lie most atrociously. The remedy, then, is to support them with an abundance of unimpeachable data. One method of collecting statistics is by personal enquiry, and another one is collecting them by mail, the most economical, and on the whole, most satisfactory. In 1879 the Fish Commission determined to collect statistics of fish production and fish consumption in the United States. The first item was returned by officials; to ascertain the second item, eighteen questions were sent to every one of the 41,517 postmasters of the United States. The result of this experiment is typical of what may be obtained, not by individuals, but by governments. At the expiration of two hundred days, 16,996 returns were sent in, or 41 percent of the whole. The same circular was then sent back to all those who had not replied, and after two hundred days 13,224 more replies were received, or 54 percent of the balance, a much greater percentage than resulted from the first enquiry. After two sendings they received replies from 73 percent. of the whole number. The circulars were not sent back again, but supposing they had been and that the results had been equally good, the whole would have amounted to 86 percent. So much for the general result. Now, how fast did the returns come in? During the first twenty days 9,681 replies were received, or 57 per cent. of all the first sending; after the second twenty days, 4,711 more, while practically nearly the whole came in during the first sixty days. Ninety-five percent of the post-offices from Dakota sent replies, while only 65 percent of Louisiana post-offices sent returns. The difference was to be accounted for partly in the general intelligence and business capacity of the people, which he considered superior in Dakota to those of Louisiana. Another reason is that in Dakota the postmasters were all appointed but two or three years before the circular was sent them, while in Louisiana and other older States they had held their offices during many years. The inference is that a new broom sweeps clean, and that newly appointed officials are more punctual in obeying behests of governments than old officials.

Dr. Hough said the force of the enquiries would depend, first, on the authority under which they were issued, and second, on whether the recipients of the circular were in sympathy with the object of the enquiries. In 1867 he was appointed by the New York State Convention to collect information with respect to revising the State Constitution. The circular was sent to the judicial officers of the State, and the proportion of replies received was remarkably great—about 95 percent.

Mr. Dodge, Statistician of the Department of Agriculture, Washington, thought if the Eastern and Northern States returned better responses to the circular, it was because the people were more interested in the subject of fish than were the people of the Southern States. The collection of agricultural statistics proved that the responses were far more prompt and complete from those States practically interested in the question.

INTERNATIONAL STANDARD TIME.

The President then contributed a paper "On International Standard Time," Mr. Sanford Fleming, C.E., taking the chair. The subject is now receiving growing attention on account of the greatly increased travelling of the people, and the growth of the telegraphic system, linking together all parts of the world. Hence many standards of time have been adopted, in the United States alone to the number of seventy. It is necessary under these circumstances to have as many minute and second hands to a watch as there are standard times. It is possible to reduce all these to one by the adoption of some standard meridian, so as to have but one and the same minute and second throughout the world. The published time tables of the postal system of the United States are now based on a single meridian, that of Washington. The object is not the abolition of local time, but to find a standard applicable to large portions of the earth's surface. There is sectional time, and cosmic time proper, where all time is referred to one meridian. There is some difference of opinion as to the selection of the standard meridian, and the American Congress has authorized the appointment of three commissioners to unite in an international conference for the purpose of agreeing upon an international meridian. In the United States the two most prominent times in use are the Washington time for astronomical purposes and Greenwich time for nautical purposes. Another point which he proposed for the standard meridian is Behring's Straits, differing but little from Greenwich time, being only 44 minutes faster than the sub-meridian of Greenwich. The Behring line for zero has the advantage of passing mainly through water alone, thus causing but little inconvenience to people, as it is a great inconvenience to have a line on one side of which it is Tuesday and the other side Wednesday, or involving a similar transition in the day of the month. The next question is numbering the meridian from the standard. Twelve on the dial would be considered both as midnight and as noon, and on a twenty-four hour watch twelve would be considered as noon, the zero being considered as midnight, and the meridians would move steadily, as they do in nature, from west to east. A diagram was explained by the speaker, numbered from west to east and showing the zero meridian at Behring's Straits, or 180° from Greenwich. When midnight passes Greenwich the cosmic day changes. By this standard meridian A, 15° from zero, would be the first hour of the day; meridian B, 30° from zero, would be the second hour of the day; meridian C, 45°, would be the third hour of the day, and so on. The difference of the times on any two meridians, and the difference of the meridians themselves are the same.

The President having finished his address, the discussion thereon was postponed.

OPENING THE REDPATH MUSEUM.

AN IMMENSE GATHERING OF THE REPRESENTATIVE SCIENTISTS OF AMERICA—MR. PETER REDPATH HANDS OVER HIS MAGNIFICENT GIFT.

The magnificent stone building which seems to stand sentry over the older and more modest College of McGill University has already taken its proper place as one of the greatest architectural beauties of Montreal. Visitors are now admitted to the interior of the building for the first time, and visitors must have great expectations indeed if they are disappointed when they have entered. A wide flight of stone steps leads to the main entrance hall, on the floor containing very fine class-rooms and a lecture theatre. The oak floors, the carved pillars and wainscot also of oak, strike the eye at once, and the finishing of every part of the building does credit to the builder's skill as well as to the donor's heart. One flight of wide oaken stairs leads to a lobby, where are seen Dr. G. M. Dawson's collection of stone implements from British Columbia and Queen Charlotte Island. Here are also stone axes, chisels, hammers and tobacco-pipes, used by the primitive Canadians when steel and meerschaum were unknown. carved wooden utensils and hideous caricatures of human faces; aboriginal remains from Newfoundland and Nova Scotia; Indian pottery found here, looking as though domestic disagreement was not uncommon among the Montreal Indians; and masks very like those worn by the youth of England on Guy Fawkes' Day: a look at these, and at the footprints of uncouth monsters in the clay of pre-historic ages, and we go into the great hall. Before entering, however, the eye is caught by a neat inscription in gold and black, beside the door—How beautiful are thy works, O Lord; all of them in wisdom thou hast made. Fairly inside, and turning to the right, we see large petrified impressions of plants on the wall. Glancing at the horizontal and perpendicular glass cases, the visitor comes upon fossil corals, shells and fishes, and more footprints. One fossil jaw of a fish almost makes one forget the thousands of years between us, and shudder at the frightful teeth pointing in all directions. Part of the petrified stalk of a *sigillaria* is like a handsome pillar, near the stump of a great tree-fern, presented by Professor Hall. An interesting assortment is that of rocks showing the marks worn into them by currents, rills, ripples and rain, during unknown ages. The end next the old buildings is brightened by some charming specimens of green, purple, brown and yellow crystals of Fluorite, and by pieces of quartz containing the precious metal itself. Here, too, there is a model of the "Welcome" nugget of gold found in Ballarat, Australia. The specimens of ores, quartz and mica are worth seeing, as well as a very large mass of amethyst from Thunder Bay. If color is wanted there is the blood red Heulandite and the green serpentine. Our familiarity with coal may have bred contempt, but various forms of the black diamond find places here under glass; familiarity with the peculiar "Dawsonite" found in this neighborhood will not be so great. The delicacy of the gypsum crystals is exquisite, and the specimens of Canadian marble given by Dr. Selwyn, Director of the Geological Survey, say well for Canada's resources in this respect. Here there is a beautiful and fairy-like stalactite, from the Cave of Matazas, Cuba, given by Mr. Redpath. The contorted strata and the veinous rocks will all be objects of interest, but on beginning the return trip a halt is sure to be made at the case where the most villainous-looking weapons in the shape of teeth are to be had, while the skulls and unique jaw-arrangement of the Diprotodon Australis, and the machairodus neogæus are peculiar enough for the greediest lover of unique horrors. One fish's jawbone measures about three feet long. Here must be mentioned a striking fossil like a feather brush, the handle being a very long appendage or tail. Coming back to the door, a gigantic ammonite is a conspicuous object, but the most study should be given to the great beasts hung on the wall. Some animals, presumably lizards, lived in Wurtemburg, Germany, and succeeded in reaching a length of seven or eight feet; while the same space is occupied by the mere paw and wrist of a creature that kept itself, or was kept, in Dorsetshire, England. The immense *Megatherium* needs no pointing out; there are several articles of interest, including the vastest skulls.

Upstairs again, and we are in the broad gallery looking over the hall. Keeping still to the right, the corals, sea-anemones, sea-urchins, and starfishes, are worth seeing if only from an æsthetic point of view. The magnificent collection of shells, belonging to the late Dr. Philip Carpenter, takes up the far end. A first duplicate of the "Philip Carpenter Collection" of shells, reserved by the late Dr. Carpenter for private use and study, remains in possession of his widow, Mrs. Carpenter, 241 Univeristy street, Montreal. It contains, according to a catalogue accompanying it 4039 species. There is also one of the best duplicates of the "Mazatlan Collection" of Dr. Carpenter. These collections will be disposed of on reasonable terms, more especially to any public collection or working naturalist.

The late Dr. McCulloch's collection of birds and mammals includes feathered specimens from the penguin to the humming bird, and other animals from the puma and the deer to the prickly echidna and the armor-plated armadillo.

THE RECEPTION.

The museum, at no time a dull building, was last night brightness itself, and flowers took all the grimness out of the monstrous antediluvian skulls and skeletons themselves. Dr. and Mrs. Dawson stood in the anteroom receiving the visitors, who poured in till it was hardly possible to walk in the building without great danger of collisions. A small platform had been erected at the north end of the building, and on this stood Principal Dawson, Mr. Peter Redpath and Judge Day.

The President having briefly introduced Mr. Peter Redpath, whose generosity thus bestows on the University such a museum,

Mr. Redpath said—Mr. Chancellor, I would fain have had ceremony dispensed with on this occasion, but as some ceremony seems to be demanded I am here by invitation for the purpose of transferring to you as the representative of McGill University, in the presence of this distinguished company, all my right, title, and interest in the building in which we are assembled. The conveyance, without other condition than that the building shall be maintained for the purpose for which it has been erected, will be found in the document which I now place in your hands. The undertaking was not begun without deliberation, and now that we have come to the end under such happy auspices, I see no reason to regret what has been done. I trust that the benefits which it was intended to confer will be realized. (Loud cheers.)

The Hon. Charles Dewey Day, the Chancellor, then said: Mr. Redpath, it is my good fortune as Chancellor of McGill University, to be its mouth-piece on this auspicious occasion. In the name and on behalf of that institution, I accept the gift of the Peter Redpath Museum now formally conveyed to it. It is a difficult task to express in fitting words our sense of the obligation under which you have laid, not only the University, but also the friends of education, in the interesting and important department of science which your liberality is intended to promote. The architectural beauty of this edifice in which we are assembled—its classic design—the elegance and completeness of its finish, make it of itself an education of no small value; while joined to these excellencies its ample proportions and perfect adaptation to its destined uses indicate the munificence and wisdom of its founder. We trust it will remain for future generations what it now is, a majestic monument, bearing the honored name of him in whom the power of riches has been added to the better gift of a disposition to distribute them with a bountiful hand for the welfare of mankind. You will be gratified to learn that the valuable assemblage of objects of natural science for which you have provided this stately depository has been enriched by the addition of the life-long collections of our learned and honored Principal, Dr. Dawson—a gift by him to the University of great pecuniary and far greater scientific value, and let me add that it is but one of a long series of benefactions and self-sacrifices by which he has earned our gratitude, and acts like these extend further than their first manifest object. They give an impulse to philanthropic hearts, while they furnish a standing protest against the selfish and ignoble use of wealth. The prodigious growth of material prosperity in this our age, the marvellous creations of art and industry which cover the face of the civilized world, and the consequent increase in dangerous luxury, have in them a voice of warning. History tells us what they mean if left to themselves, without the restraining and elevating agencies which build upon them a true and permanent civilization. We accept this hall of science as a noble contribution to those higher agencies, and now before this assembly, made august by the presence of our distinguished guests, true kings of the realm of thought, and in the presence of the benefactors of this University, enlightened men, and not less sympathetic and generous women, we dedicate the Peter Redpath museum to the study of the varied and wonderful manifestations of God's creation, and emphatically we dedicate it to the use of the earnest student, who in reverent questioning of the works of living nature, and in their records upon the stony tablets of a dead and buried world, seeks that vital truth, which, above all other things, it imports the mortal spirit of man to know.

Dr. Carpenter was then briefly introduced by the chairman. He said when he received an invitation to take part in this meeting he felt that he could not refuse, because he wished to give expression to the very strong and earnest interest he felt in this city. Nothing had been of greater interest to him since he had been in the city than to be accosted on all sides as the brother of Philip Carpenter. Every citizen of Montreal seemed to have known and honored and have loved him. Dr. Doddridge's little girl once said, "Papa, I do not know why everybody loves me so, unless it is because I love everybody." It was known that Philip Carpenter loved everybody, and everybody in return loved him. (Applause.) All honor to the great and good man who had given this noble building for the reception not only of the collections of the University, but to afford an illustration of the great principles of natural science. Having alluded to the value of the collection of remarkable fossils, as he believed them to be, termed the *eozone canadense*, discovered by Principal Dawson and Sir William Logan, he spoke of the numerous opportunities afforded to students to acquire scientific knowledge as compared with the opportunities which existed when he was a young man. He rejoiced at the thought that natural science was now fairly on its legs and he was confident that it would keep pace with all the great departments of physical science, and concluded with a eulogy upon science as a means of disciplining the mind.

Professor Hall, who followed, directed attention particularly to the arrangement of the Museum. The collections, he said, had been placed in an order which enabled them to study created objects from the earliest to the most recent geological period. All that was required now was a staff of teachers which would render available all of these valuable objects, instead of permitting them to lie idly upon their shelves. The building was in itself a beautiful object of art, adapted for the work in its systematic arrangement. He concluded by reading an extract from Herbert Spencer upon the value of scientific learning.

Dr. Dawson acknowledged, on behalf of the American Association for the Advancement of Science, the great benefits that had resulted to science from the gifts of this benefactor.

During the evening the Rev. H. C. Hovey gave an interesting lecture, illustrated by photographs of American caverns, taken by artificial light.

THIRD DAY—FRIDAY.

MORE NEW MEMBERS—ELECTION OF COMMITTEES TO CONFER WITH OTHER SCIENTIFIC ASSOCIATIONS.

The Association met at ten o'clock in General Session, President Dawson in the chair. The Secretary read the following list of new applicants for membership, among them a number of Montrealers will be noticed, who were duly elected:

J. C. Aeling, Albert Lea, Minn.; Capt. Robert C. Adams, James Bemrose, Montreal; C. H. Du Bois, Minneapolis; Miss Anne Brown, Cincinnati; J. H. Burland, Montreal; Mrs. W. H. Chapman, New York; Mrs. Maria J. Chase, Philadelphia; Frederick Cole, Dr. J. A. Crevier, Montreal; Surgeon Dwight Dickenson, U.S.N., Washington; Mr. A. S. Diven, Elmira, N.Y.; Ignatius Donnelly, Litchfield, Minn.; Captain C. M. Dow, New York; Dr. Charles R. Dwyer, Fort Wayne, Ind.; Dr. Louis L. Dunbar, San Francisco, Cal.; Prof. G.P. Girdwood, McGill College, Montreal; Horace Hatch, M.D., Washington; C. L. Herrick, Minneapolis, Minn.; Miss Susan Hetzel, Clifton, Va.; Sarah E. Hibbard, Montreal; Silas W. Holman, Boston; J. Hotchkiss, Stanton, Va.; Prof. D. S. Jordan, Indiana State University, Bloomington, Va.; D. S. Kellicott, Buffalo, N.Y.; John Kennedy, Montreal; W. B. Lennon, Brockport, N. Y.; Dr. G. W. Major, Montreal; J. R. Mendenhall, Minneapolis, Minn.; Dr. H. L. Morse, Boston; Henry Mott, Montreal; Edward Murphy, Montreal; A. B. Nettleton, Minneapolis; O. D. Norton M.D., Cincinnati; F. A. Ober, Beverly, Mass.; Prof. M. Oliver, U. S. Navy, Annapolis, Ind.; J. B. F. Osgood, Salem, Mass.; F. A. Owen, Burlington, Vt.; W. Reed, Hartford City, Ind.; W. G. Sargent, Sargentville, Maine; Prof. J. O. Stillson, Evansville, Ind.; Rev. E. R. Stinson, Toronto; A. P. Southwick, Norfolk, Va.; Mrs. Jos. Tiffin jr., Montreal; E. R. Tyler, Washington; F. C. Valentine, New York; H. H. Warner, Rochester, N.Y.; Dr. Chas. Warren, Washington; R. C. Woolworth, San Francisco; E. Wright, Boston.

It being necessary to elect Vice-Presidents for sections A and H, Prof. W. A. Rogers was elected for section A, and Prof. Alex. Winchell for section H.

Mr. Hotchkiss, Virginia, moved that some members of this Association be authorized to prepare and publish a suitable memoir of the late Prof. W. B. Rogers, of Virginia, setting forth the great value of his services in various departments of science. The motion was agreed to.

The Standing Committee reported,

That a committee be appointed to confer with a committee of the British Association on the annual records of science, said committee to consist of Dr. Dawson, Montreal; Prof. Clark, Cincinnati; Prof. Tanner, New Haven; Prof. H. W. Martin, Baltimore, and Prof. C. A. White, Washington. The report was adopted.

Also, that a committee be appointed to confer with committees of foreign associations for the advancement of science, with reference to an international convention of scientific associations, the said committee to consist of Dr. T. Sterry Hunt, Montreal; Prof. Alex. Agassiz, of Cambridge, Mass., and Prof. Simon Newcome, of Washington.

The report was adopted, and the Association then adjourned.

SECTION A.

THE CONSERVATION OF THE SUN'S FORCE.

Prof. Pliny Earle Chase, of Harvard, this morning contributed a paper on "Conservation of Solar Energy." All forms of solar energy are due to solar radiations. The maintenance of their energy, therefore, depends on the maintenance of their radiations. Every solar particle is continually solicited toward different nodal centres of gravity. Hence arise cyclical oscillations, representing the results of equal actions and reactions, in which the particles alternately recede from and approach to the several centres of gravity. The model action of centres of gravity is accompanied by an unstable equilibrium of the sun's photosphere, in consequence of the photo-dynamic equality of luminous and gravitating oscillations, which tends to drive all the particles toward the limit between aggregation and dissociation. Berthelot's investigations of explosions of gaseous compounds by detonating agents have indicated the existence of explosive waves which are quite distinct from waves of sound, and have shown that compounds and explosive mixtures generally become more sensitive to shocks as they near the temperature at which they begin to decompose or combine. Hence a meteor, or even a single molecule which has acquired a sufficient velocity of subsidence in its downward fall may explode a gaseous compound which is in or near its nascent state, and the explosion may react upon the falling mass or molecule so as to leave it in a state of unstable equilibruim which is ready for explosion by the next like subsidence. The particles which are repelled to Laplace's limit, as Siemens has shown by the centrifugal force of solar rotation, yield a mechanical equivalent of 152,000,000 T for every pound of matter that subsides to the poles. The spiral character of the subsidence gives rise to Ampérian currents which account for Maxwell's identification of luminous and electro-magnetic waves.

SECTION B.

ELECTRICAL EXPERIMENTS ON THE BODY OF THE LATE PRESIDENT GARFIELD.

Prof. A. Graham Bell, the celebrated electrician, read a paper this morning upon the electrical experiments to determine the location of the bullet in the body of the late President Garfield, and upon a successful form of inductive balance for the painless detection of metallic masses embedded in the human body. The Molson Hall was crowded. In opening his lecture, Prof. Bell said that the subject of his lecture recalled a time of intense excitement among the American people. In the dread of the barbarous method of knife and probe in discovering the hidden bullet, the lecturer and other scientific men in the States cast about for some more painless means. The telephone naturally suggested itself to the lecturer as a means of doing this, in connection with the ordinary inductive apparatus invented by Professor Hughes, of which the principle is the neutralizing of the action of one set of coils by the reversed action of the second. Professor Roland by the application of the galvanometer modified this induction apparatus and this was afterward improved by other inventive scientists. The lecturer himself when the news of the assassination flashed through America, had just invented an induction apparatus, consisting of two flat coils of wire superimposed on one another. Professor Newcomb thought the presence of the bullet might be indicated by the retardation of a magnetic needle caused by the lead. The lecturer offered to make any experiments necessary, and Professor Newcomb requested that he would discover whether the presence of a leaden bullet would deflect a magnetic needle suspended over it. He applied the principle of the induction balance and was astonished at the instant effect upon the needle, the bullet being placed about an inch from it. In the ordinary induction balance the influence of the bullet was not manifested at any distance and the task was now to construct a balance which could overcome this difficulty. The best theoretical arrangement of coils for an exploring machine was learned from different sciences. These coils when made and tried, were, however, no better than the first, being extremely sensitive to a piece of lead within the helix, but with a hearing distance of only about an inch and a half. After trying all sizes of coils from one of the size of the bullet explored for, and using battery power from one of the feeble battery to twenty enormous Bunsen cells, the hearing distance of the bullet remained about the same. It was then determined to proceed empirically to work to discover the necessary coil. An instrument was made in which a brass ring was used instead of a leaden bullet, and under different conditions, the hearing distance increased with the diameter of the primaries, but the maximum effect was gained when the secondary coil was placed outside the primaries. This led to the idea that the primary should be larger than the secondary, and acting on this idea a new instrument was constructed, the hearing distance of which was five centimetres. On the 22nd of July, 1881, an experiment was made by request of Dr. Bliss on the person of Lieut. Simpson, who had carried a bullet in his back for a number of years. A sonorous spot was found. The results were communicated to the President's medical attendants, and they decided that an experiment should be made on the person of the President on July 26th, 1881. Prof. Knowland suggested before this, however, the application of a condenser to the circuit and by this means a distinct whistle was heard when the apparatus was placed near a piece of lead. The results obtained at the experiment were as follows: The telephone gave a peculiar spluttering sound which could not be lessened by any arrangement of the coils. Passing the apparatus over the lower part of the right side of the President's abdomen a sudden increase of sound was heard, but a repetition of the operation failed to verify this. Owing to the faulty adjustment of the condenser the experiment was not a success. The condenser was improved and the apparatus tried successfully upon several old soldiers who were wounded in the civil war. Flattened coils were afterward used and by this means a hearing distance of twelve centimetres or five inches was obtained. The two coils were placed in a wooden handle, and a clearly-marked sonorous spot was easily discovered on the body of another wounded soldier. With this apparatus a second experiment was made on the body of the President. The instrument was now so sensitive that a pulsation was secured at two elevations upon passing it over the body of the President. An area of sound was discovered, and it led to the idea that the bullet was within this area, which was afterward found to be incorrect. This area of sound was produced by a steel wire mattress under the President's bed, a fact which had been overlooked by the President's physicians. The apparatus was afterwards improved by embedding the two coils in paraffin as nearly as possible in a position of silence, the slight residuum being overcome by the smaller coils connected with the larger ones and adjusted by a micrometer screw. With this a perfectly successful experiment was performed on the body of Col. Clayton, who had suffered for several years from the presence of an Enfield rifle bullet. The apparatus was subsequently modified in form for purposes of convenience, and now the exact position of a bullet can be accurately determined in any position of the human body. The results may be regarded as giving promise of still greater possibilities in the future.

Professor Bell sat down amid loud applause. There was no discussion, and the section at once adjourned to its own room.

It was then moved by Dr. Vander Weide, seconded by Dr. Johnson, that the section pass a vote of thanks to Dr. Bell for his admirable lecture. Carried.

Dr. Bell then brought before the section a proposed method of producing

ARTIFICIAL RESPIRATION

by means of a vacuum jacket. He proposed to surround the breast of the unconscious patient by a rigid jacket, a drum somewhat larger in diameter than the body. The apparatus can be rendered practically air-tight by a rubber band round the thorax and another round the loins. Upon exhausting the air inside the drum, a partial vacuum is produced around the abdomen. Under such circumstances the pressure of the atmosphere forces air through the mouth and nose into the thorax, causing the depression of the diaphragm and consequent expansion of the abdomen. The alternate rarefaction and condensation of the air confined around the abdomen thus causes alternate inspiration and expiration.

Prof. W. LeConte Stevens then read a paper on the

BINOCULAR UNION OF SPECTRAL IMAGES.

If a sharply defined object be momentarily illuminated by the intense light of the electric spark a positive and then a negative after-image is perceived, neither, however, lasting very long. A negative after-image lasting several minutes may be secured by gazing very steadily on one point of an object which contrasts sharply with the surrounding area while the whole is illuminated by the direct beams of the sun, the eyes being at the same time protected from any glare proceeding from other directions. The after image being due to fatigue of the retina in certain parts while others remain unfatigued, appears always in the direction of the visual line, changing in apparent position with every motion of the eye. A series of experiments in this direction showed conclusively that the conscious perception of double images, far from being conducive to clearness of binocular perceptions, tend rather to interfere with it. If it be said that one unconsciously perceives them and distinguish between the two kinds, this conclusion cannot be confirmed or disproven, except so far as experiment may be accepted as having some bearing upon the subject. The lecturer was inclined to discard intuitions altogether and to regard the degree of attention bestowed upon objects pictured at the moment on different parts of the two retinas as an element of more importance than either the play of the eyes or the perception of double images. Whether intuitions can be accepted as an additional guide at all is not easy to pronounce upon. In all ordinary cases of binocular vision the judgment is cumulative, the conclusion quickly reached being a product not only of difference in the degree of attention given at the same moment to objects seen by direct and indirect vision respectively, but also to variation in attention to different points directly viewed in succession to the muscular sense, while free play is given to the eyes and to all the elements available in non-ocular vision.

Professor T. C. Mendenhall, the President of the section, then read a paper on the reduction of the electrical resistance of the carbon button by the passage of an electrical current.

Prof. De Volson Wood presented the results of some experiments on the

"TENSION OF LUMINIFEROUS ETHER."

Whatever the structure or composition of the luminiferous ether, it is, so far as we are able to determine, uniform in its property of transmitting light, since the velocity of light determined by the eclipses of Jupiter's satellites is substantially the same as that determined by experiments entirely within our atmosphere. In attempting further to determine its probable qualities we assume that it is governed by the same general laws as attenuated gases in transmitting a disturbance within it by a wave motion, and that its internal stress is proportionate to its mass and square of the velocity of its particles conjointly.

SECTION C

THE CONTAMINATION OF CITY WELLS.

Prof. G. C. Caldwell, Ithaca, read the first paper in the section of Chemistry this morning, on "Pemberton's method for the volumetric determination of phosphoric acid." The results were given of a few tests of the method, and a simple form of a filter for use in its manipulation was described.

Mr. Arthur H. Elliott read some notes on the action of acids on the light oil, and an analysis of the body called "pyrrol red."

Then followed a paper by R. B. Warden, North Bend, Ohio, containing observations on the

CONTAMINATION OF CITY WELLS.

The city of Hamilton, Ohio, is situated on a gravel terrace of the Mianic river. This material is so open that it is said an underground current may be observed, parallel to the general course of the river. A bed of blue clay or "hard-pan" is sometimes pierced in sinking wells, which generally go to an abundant supply of water in the gravel, at the level of the river. Under such circumstances, pollution of the wells by surface drainage, vaults, &c., is inevitable. A complete analysis of numerous samples would be instructive. In a short time, numerous determinations of chlorine will serve a useful purpose. Samples collected from 17 wells, in July 25th and 26th, 1882, contained from from 0.9 to 27 parts of chl. to 100,000; while the Miami River contained only 0.6 part. Experiments are now in progress to show how the extent of contamination is likely to be influenced by the nearness of vaults, stables, &c., the topography and drainage of the surface, the frequency of use, recent rains and other modifying circumstances. The general plan includes the following experiments: To demonstrate the transfer of material from vault to well, a quantity of brine is thrown into the former, and a series of samples of water is taken from the well for chlorine determinations. To show how this transfer may be modified by varying conditions of humidity, water may be added to the vault, while samples are collected from the well as before. To study the effects of dilution an unused well may be steadily pumped, samples being taken at intervals. To study the reputed underground current, salt may be thrown into an open well, and the effects observed in neighboring wells in all directions.

CARBONIC DIOXIDE IN THE AIR.

Mr. Ernest H. Cook read a paper on "Carbonic Dioxide in the Atmosphere." It has been calculated that men give off in breathing about 1,500,000,000 kilogrammes of this gas every day; decaying vegetables add 1,000,000,000 kilos; and with the breathings of animals and volcanoes the amount is estimated at 45,000,000,000 kilogrammes per day. In 115 years this will be doubled, even without considering the loss of oxygen, which is continually going on—this would be the case if there were not compensating circumstances. There are 4 parts of carbonic dioxide to 10,000 parts of air over the land, and only 3 parts in 10,000 at sea.

LABORATORY APPLIANCES.

Mr. Ernest H. Cook read a paper on this subject. The principle of exhaust which had been so successfully employed in the construction of the Bunsen or Spreyed Pump is already largely used by chemists. There was an obvious application of it which has not hitherto (so far as the author is aware) been employed. He had found the simple device of which he spoke act well in his private laboratory, and was induced to make it known at the present meeting, hoping that it might have a large sphere of usefulness. It was simply applying to ordinary air and water ovens the same principle as an ordinary air bath made in the usual manner. At a given point a hole was cut and a piece of pipe fastened in the side of the bath high up, connecting with an exhaust or waste pipe. A stop-cock let into the pipe served to regulate the rate of removal of the air from the chamber. A violent or too rapid exhaust is not desired, as the fall in temperature thus caused in the oven becomes considerable, owing to the great influx of cold air. When they considered the chief cause producing evaporation, the saturation of a given mass of air, the advantage of a means of gradually removing the air from the interior of these ovens became apparent. Experiment shows that by properly adjusting the rate of flow of the water from the exhaust pipe, and thus the rate at which the air traverses the oven, evaporation will go on twice or one and a half times as rapidly as in the ordinary closed ovens in common use. In some small laboratories an adaptation of this principle of a stink cupboard will also be found useful. For this purpose he had a box made two inches by one foot one inch by one foot six inches, with a glass door opening outward. Any acid which requires heating or sulphuretted hydrogen apparatus is placed inside this box, and by means of a hole cut in the back with a piece of pipe let in, it is attached to an exhaust apparatus. By regulating the fall of water through the pipe, the current of air drawn through the cupboard is also regulated, and all noxious gases drawn into the exhaust pipes. When it was necessary for the door to be opened in order to get to the interior the water in the pipe should be turned on a little faster in order that a more violent current through may be produced.

NOTE ON THE ABSORPTION SPECTRUM OF HUMIC ACID.

Mr. H. Carrington Bolton showed that though similarity of absorption indicated identity of chemical composition in all cases, a comparison of the absorption spectra of humic acid prepared from peat and that from sugar must be interesting. The artificial material was made with 100 parts of sugar, 300 of water and 10 of sulphuric acid gently boiled for a number of hours. The liquid, after turning brown, deposits brownish flakes of humic acid. The insoluble material was then well washed and dissolved in a solution of caustic potash; this solution was filtered to separate humic and acidified with hydro-chloric acid, and this was washed until it commenced to run through the filter containing it. If this were dried it became insoluble, but if washed until the mineral acid was removed it dissolved in hot water, forming a solution like caramel. Humic acid was extracted from peat or muck by Detmer's process. Dried at 120° C. it yielded 27.5 percent of ash of light gray color, and 70.5 percent volatile and combustible matter. The writer gave other interesting facts concerning the result, showing that 500 grammes of this moist muck was digested with water rendered slightly alkaline by potassium carbonate, and the dark liquid filtered through cloth and then through paper.

NITRO-SACCHAROSE.

Arthur H. Elliott, Ph. B.; C. S., read contributions from the laboratories of the school of mines, Columbia College. He referred to nitro-saccharose as a curious body, concerning which no definite conclusions as to its constitution appeared to have been brought on by the labors of Schœnbrin and Lobrers. He had made some experiments upon it with ammonium sulphydrate, ferrous chloride and other solvents, and in the preparation of nitro-saccharose pure crystals of cane sugar were used and reduced to a powder fine enough to pass through a sieve containing 100 holes to the inch, after which it was aired in a water bath. He then described methods used to nitrate the sugar. In the first 50 grms of sulphuric acid, 35 grms of nitric acid were mixed together and the mixture cooled to 15° C. Then 25 grms of the finely powdered sugar were slowly stirred into the acid mixture and the temperature rose to 30° C., the mixture being constantly stirred for 15 minutes. The clot thus formed was thrown into cold water and the acid mixture also added. The nitro-saccharose thus formed was collected together into one mass, and after washing and squeezing in plenty of cold water it weighed 24.4 grms. The material thus obtained was a soft silky-looking, wax-like body plastic and adhering to the fingers when removed from the water. At 30° C it was soft enough to flow like melted pitch. It could not be washed free from acid. When heated on a water-bath it melted and began to decompose, giving off red fumes. An attempt was made to neutralize it with potassic carbonate, but the action was very energetic and most of the material dissolved in water.

The writer also gave other specimen tests and said that the following facts were noticed: When heated with water it decomposed as it dissolved; on heating with turpentine a slightly yellow fluid was obtained; carbolic acid is reddened, both cold and hot. With olive oil mutual decomposition took place on heating. Sperm oil acted like olive oil. Potassic hydrate gave a brown solution when heated. Ammoniac hydrate even in the cold gives a yellowish-brown color. Nitric acid decomposes it on heating, giving red fumes. Hydrochloric acid, both cold and hot, decomposes nitro-saccharose. Starmon's chloride is decomposed giving a white precipitate, even in cold. Ferrous sulphate, also chloride, decomposes nitro-saccharose even in the cold, giving brown precipitates. Ammoniac sulphychlorate, both hot and cold, decomposes this body, giving a liver-colored solution with separation of sulphur. The action of ferrous chloride was given, also ammonious sulphydrate, all of which were very interesting to those who were in attendance.

A paper was also read from several agricultural chemists on "the estimation of reverted phosphoric acid."

The report of the committee on

AN INDEX COMMITTEE

was read as follows:

Resolved,—"That a committee of five be appointed to devise and inaugurate a plan for the proper indexing of the literature of the chemical elements. Dr. H. C. Bolton to be chairman of the committee and the other members to be nominated by the Vice-President for Section C. The committee shall be required to report at the meeting of the chemical section in 1883, and it shall have full power to invite the cooperation of volunteers."

The resolution was carried, and the committee soon afterward adjourned.

SECTION D.

THE SHEARER SCHEME.

Mr. Bateman, in his paper this morning, said it was with some diffidence he came before the section with a scheme which as yet was but an idea on paper. He felt, however, that he had, although perhaps a more impartial, still a more critical audience than any Parliamentary committee. The great scheme was originated by Mr. James Shearer, a prominent citizen. He had been requested to examine it, and to correct and modify it according to the true principles of hydraulics. It was not because of the interest that would accrue to Montreal or the Dominion of Canada that he read the paper but to bring before them the purely scientific merits of the case. He proposed, therefore, dealing with the present current's effects upon the scheme, the ice in river as at present and what it will be when the proposed works are completed; effects on navigation, as well as the objections urged against the scheme. He had plans upon the wall and showed the embankment as starting from the west abutment of Victoria Bridge to St. Helen's Island. The embankment would contain a series of sluices which would supply 810,000,000 cubic feet of water per hour to the harbor. The total yield of the St. Lawrence is 1,255,000,000 cubic feet of water per hour, and the sluices would supply one-third of the water. From St. Helen's Island to the south shore there would be a bridge about 3,050 feet long, while the embankment would be solid masonry piers, with a vertical batter of 1 in 45 horizontally, height 30 feet at the Victoria Bridge, and 50 to 60 feet at St. Helen's. There will be culverts, some 65 in number, 35 of which will be built with a view to adapting them to lifts, milling purposes, &c. The material for the inside of the wall of masonry will be taken from the harbor, and eventually faced with a stone wall and such other works as are necessary for the harbor. The embankment at the top will be 65 feet, with a highway and a double track of rails; highway 33 feet in width and railway 32 feet. The bridge would be of solid masonry like Victoria bridge, placed at right angles to the current of the stream, and will be 50 or 60 feet in height above low water, with a breadth of 50 feet. A channel on the south side of St. Helen's Island 300 feet wide and 16 feet deep would accommodate the Upper Canada traffic. It had been objected that the scheme would (1) lower the harbor, (2) it would imperil the discharge into the tail-race of the waterworks, (3) flood the lower portion of the city. Except at the top of St. Mary's current and Sous-le-Mont the first objection was not tenable; as the tail-race is over 12 feet above the ordinary surface of the St. Lawrence, it is difficult to understand how, with only a three foot rise, they could affect the works, nor would they flood the lower part of the city. The most sensible objection raised was the flooding of the south shore of the river at St. Lambert's and Longueuil. From the locks at Lachine Canal to the St. Mary's current the discharge was no more than 760,000,000 ft. per hour, and with a current of $4\frac{1}{2}$ miles an hour. The extra discharge of 1,255,000,000 cubic feet is due to the upper currents. The water would be lowered at Sous-le-Mont, but the useful portion of the harbor would not be lowered to any extent. He would admit that the scheme would lower the abnormal height of the water some ten or twelve inches. He explained the action of ice to be entirely unknown as a general thing, but showed its course when floating down. He noticed sometimes the water ten feet higher in the harbor than at Longueuil, and sometimes only three or four feet. Ice-dams at Ile Ronde and Boucherville had been known to raise the water some twenty-five feet. The scheme would at any rate rid the harbor of the jam at Ile Ronde. The scheme, he believed, would give Montreal a still water channel. He believed that the water at Victoria Bridge would be raised about ten inches. In answer to a question, Mr. Bateman showed that the St. Mary's current would be but four or five miles an hour, according to the discharge of the sluices when the scheme was complete. The chief recommendation of the scheme was for its railway bridge and connections and still water harbor. It was desirable to have another bridge.

WALL PAPERS.

Mr. T. R. Baker read a paper on "The Permeability of the Linings of House-walls to Air." This was an effort to demonstrate the ease or difficulty with which air found its way through wall paper. He believed that ordinary wall paper rendered the walls of dwellings nearly air-tight. Hygienically considered, the walls of a house should be porous, like our clothing, so that our bodies can have through them, as also through our clothing, free intercourse with the external air. Compact wall linings, even when their minute pores are open greatly interfere with this intercourse, but when their pores are closed or contracted with water, as they are when the walls are damp, it is almost completely cut off, and such linings increase the dampness of walls, the walls becoming damp in wet weather and being prevented by the greatly hindered air circulation from soon drying. This prolonged dampness also prolongs other evils produced by damp walls, and, therefore, wall papers and their substitutes are to be condemned and the old-fashioned whitewashed walls to be commended.

AIR TRAVEL.

Mr. M. H. Lynch read a paper on "The future of the balloon as an actual means of aerial travel." He said that to make fly a machine that is heavier than the air there was needed to merely lift it a great part, if not all that it can carry, of the weight of force necessary to effect or affect its motion. A machine lighter than the air would at least rise of itself, and carry more or less surplus weight of force than may be required to make it do something more than merely rise. So much had been attained in inventions of late years that common people were ready to expect any result that may be foreshadowed. Even perpetual motion might be discovered. The rest of the paper dealt with what may be achieved by the future as to voyaging in the air, and closed without offering any practical suggestion.

SECTION E.

DR. DAWSON ON PALÆOZOIC FLORA.

Palæozoic Floras of Eastern North America and especially in Canada, by Principal Dawson. The attempt has been made to subdivide the palæozoic floras into minute divisions, each bed being supposed to have a special accompanying set of plants, but he thinks it impracticable to divide the floras more than as follows:

1. Permo Carboniferous.
2. Coal Formation.
3. Millstone Grit.
4. Carboniferous Limestone.
5. Horton Series.

These are all carboniferous. Next on the floras of the Upper, Middle and Lower Erian, and possibly the Silurian. The Permo Carboniferous has many plants found beneath, with Voltria and others of a Cycadacean type. These are like the plants of the Permian in Europe. The coal formation contains abundantly ferns, Sigillarids, Lepidodendrids, Calamites, Cordattes, etc. 135 species are known from New Brunswick and Nova Scotia. Of these 19 are sigillaris, 19 lepidodindrids, 50 ferns. More than half are common to the Dominion of Canada and Europe, and this flora is more like that of Europe than of the United States. The flora of the millstone grit is very much like that of the coal formation. The Horton series is characterized by the presence of lepidodindron corrugatum, anemites, and cyclopteris. This series is the equivalent of the calciferous sandstone of Scotland, and formations in England and Russia. In the Erian the flora is entirely different. The upper bed is characterized by the archeoptery, related to the Hibernicus, some of the species being very beautiful. The middle Erian is the home of the dadoxylon, a coniferous tree of large size. It also contains very many genera of carboniferous type like neuropteris, alethopteris, cordaites, lipidodendrids, calamites, also insects and possibly a land shell. The Lower Erian carries the psilophyton, a club-moss not known in other ages, and a large tree called prototaxites, which began in the Silurian, and does not extend above the Lower Erian. He thinks these may have been a stratigraphical break between the Lower and Middle Erian, as there was one very distinct between the Erian and Carboniferous. A fine lot of fern stems and woody fragments are known to exist in marine Erian beds in New York.

Dr. Newbury remarked that a similar series of plants is to be found in Ohio.

Prof. White said the Millstone Grit series of plants had a very fine development in West Virginia. A new coal field, containing 13 beds of first-class coal, had lately been discovered in the Flat Top District by Major Hotchkiss. The Permian types of plants are well developed in West Virginia. This group of beds have heretofore been called the Upper Barren Measures.

Note on the occurrence of *Siphonotreta Scotica* in the Utica formation near Ottawa, Ont. In the spring of 1841 three valves of a brachiopod were collected by Mr. J. W. K. Watts from a band of limestone near Ottawa. Their margins are densely fringed with a single row of hair like spines. It proves to belong to a Siphonotreta, a genus which has never before been found in America. Specimens have been sent to Prof. Davidson in England, the first authority in the world upon this branch of paleontology, and he finds the conclusion of Mr. Whiteaves to be correct. In England this genus occurs in the Upper Llandeilo.

A MASTODON IN NEW JERSEY.

A Mastodon Americanus found in a beaver dam near Freehold, N.J., by S. Lockwood. The tusks were found nearly entire, with some bones, but upon exposure they crumbled into a cheese-like substance. The animal lay upon his right side. The tusks were 7 to 8 inches long, equal to 200 lbs. of ivory. The total length was 17 feet. The animal must have died upon the dry bank of an ancient stream, and a considerable thickness of peat was over the remains. He must have been contemporary with the beaver and with man, but he lived before the glacial age, when the coast of New Jersey extended many miles further out to sea than at present.

DR. RAE'S ARCTIC EXPLORATIONS.

Dr. John Rae this afternoon described the various land expeditions undertaken for the exploration of the country between Hudson's Bay and the Arctic Ocean off the Mackenzie River. Previous to his own were first the expeditions of John Hearne 1769-71; Alexander McKenzie, 1879; Sir John Franklin, 1818-19; Richardson, 1826; Back, 1834; Dease and Simpson 1839; Rae, 1846-1853. The observations of the first were very defective one of the chiefs among the Indians said the expedition failed because no women were taken to carry the burdens and do the cooking. Alex. McKenzie discovered the river named after him, and his observations were very accurate. Sir John Franklin's first party underwent great privations, and received succor from the Indians. He described in detail the primitive mode of life adopted by his party in exploring the Melville peninsula, and south shores of Boothia gulf. His party of five men found 24 pounds of bedding sufficient. Their whole equipment weighed 90 pounds. He made these trips amounting in all to 3,000 miles, and owed his success to the small luggage taken. The lowest temperature recorded was 73° o F.

Dr. Rae described the life of their party in the Arctic region in a very humorous way. They first made the mistake of living in a stone house. The mud cement would not dry, but the party were perfectly free from rheumatism and other diseases. They took no spirits, only drinking tea and water. When at last the mud was frozen hard, Dr. Rae's books were frozen like stones and he had to sleep on them to thaw them. To keep warm at night they adopted the Esquimaux plan of stripping to the waist, to allow of free circulation. Dr. Rae described his men as such slaves to tobacco that they cut out every tobacco-smelling piece of the lining of their clothes, and filled their pipes with it, and when they reached a depot, being very hungry, the men preferred tobacco to meat. His men abstained from liquor when among the natives, so that the latter could not point to the whites as taking what they did not give to others. In the search of Sir John Franklin, in 1851, he was very near McClure. He came within forty miles of the spot where the ships were abandoned, but was prevented from further progress by immense blocks of ice and stone.

J. R. Bartlett read a paper on

DEEP SEA SOUNDINGS AND TEMPERATURES IN THE GULF STREAM,

off the Atlantic coast, taken under the direction of the U. S. Coast Survey. Work has been carried on in the steamer "Blake" continuously for several years, but he described what had been done in 1881 and 1882 under the direction of Prof. Hilgard. The Gulf Stream does not run in a basin nor is it divided into cold and warm alternate layers. The deepest part of the bottom between Florida and the Bahamas banks is 459 fathoms, 3 to 8 knots per hour current, temperature 80°-83° F. There is a wide plateau off Florida, which gradually diminishes in width in going north. Off the Carolinas it is 40 or 50 miles wide. Near Savannah he sounded at 1,840 fathoms. The 500 and 1,000 fathom lines are very close to the 100 fathom line north of Cape Hatteras up to the Georges bank off Massachusetts. Directly beneath the Gulf Stream is a hard coral limestone with no loose material. The Globigenna begins to appear at Charleston in going north, and increases in amount. The cold water from the Arctic region flows inside of the Gulf Stream off the American coast and beneath it falling down a precipice of a thousand fathoms. The Bahama section showed 44° temperature at 459 fathoms. It is $39\frac{1}{2}$° in the Gulf of Mexico at the bottom, and it washes in through the Windward Islands, south of Cuba, rather than through the Florida channel. Outside the ridge between Cuba and Hayti the temperature descended to $36\frac{1}{2}$°, but the coldest found in the Gulf of Mexico was $39\frac{1}{2}$°, down to 3,400 fathoms, the same with that on the ridge. There is no Gulf Stream in the Gulf of Mexico. He sent down a bottle of champagne to 800 fathoms, and though thoroughly corked the champagne was replaced by cold muddy salt water without displacing the cork. Hence he recommended the discontinuance of such costly experiments by future observers. Dr. Carpenter complimented the Government for obtaining such valuable observations. He referred to experiments made in the Straits of the Dardanelles, proving a very strong inward current below the surface at considerable depth, while the surface current moved outwardly. The "Challenger" expedition in their section across the South Atlantic did not discover the source of the cold water at the bottom.

DR. RAE'S ARCTIC EXPLORATIONS.

Dr. Rae continuing his paper on his Arctic explorations on Thursday afternoon said: He did not accept the theory of Sir George Nares in respect to the Paleocrystic ice, as he had seen similar masses accumulated in a few months. Traces of Sir John Franklin were obtained from the Esquimaux. Seeing a man with a gold band around his head Mr. Rae asked where it was obtained. They said from a party of white men to the west who were all dead. Many articles of ornaments were found as Sir John's Cross, of knighthood and silver coins. They said the men were all dead, having died four years earlier. They had got books which had been destroyed by children. The Esquimaux were generous and polite, and events happening twenty years earlier had been carefully preserved by tradition. They believe they came from the west, Dr. Rae thinks them physically like the Chinese. The Greenland Esquimaux build their huts and construct their boats like the Siberian natives, though they seem very short, the small stature is due to possession of very short legs. Dr. Flam, of London, said the skeleton in his museum had 35 vertebræ, one more than the average number. They are not to be regarded as gluttonous. Mr. Rae's men ate very much meat, as much as seven pounds for a ration, yet they did not have the scurvy. There must be something in the climate requiring so much animal food.

He found effects of fourteen officers of Franklin's party, and returned early so as to communicate the news obtained. His party received the £10,000 offered by the British Government for news of the Franklin Expedition.

SECTION F.

THE FLORA OF NORTH AMERICA.

In the Biology section, Professor Asa Gray spoke of the attempts to seek a complete series of floras. Only two Floras of North America were ever completed; one of 500 pages appeared in 1841 and 1843. Mischeau was the first botanical explorer to take in the country from Hudson's Bay to Florida, whose work contained 1530 species. Perches in 1805 set out to explore the Carolinas, and came back to Philadelphia in the fall of the same year. Next year he extended his search through the northeastern States, and back by way of the coast. In 1807 he laid the grounds for the Columbia College. In 1812 he produced his works in England, and in 1820 died here at Montreal. In 1830 Dr. Gray started on his great Botanical work, being then an assistant in a doctor's office in New York. In July, 1838, in company with Dr. Torrey, the first works appeared. In November, 1838, Gray started for Europe to examine the Botanical collections of North America, and in 1840 issued another volume of 500 pages. He has made several successive journeys to Europe, as well as innumer-

able journeys over the American continent. The aim of the doctor is to give us a complete work of the North American Flora which is a more tedious and laborious work than any one not engaged in the same work would think. We can make an estimate of the polypetaly and gamepetaly; in the year 1848 there were 10,-000 known, and the increase has been very fast, as new ones are daily brought out, also very many coming from Europe, and acclimatizing, bringing the number up to the present time to 13,000. The innumerable number of specimens sent to Cambridge often help to settle disputes, but as often give rise to new and puzzling questions. Of our flora it may be said that if it were done it should be done quickly, but it is not done and must therefore be done slowly. The work must depend on the aid of botanists in sending specimens, but they must not expect the doctor to name all collections sent. The co-operation of all the botanists of America is asked to aid the doctor in his task.

Mr. Morgan said he was very agreeably surprised at the direction this paper had taken. He was much pleased to hear the remarks from the High Priest of American botanists, and thought there were many who could help him in his very arduous work.

A NEW SKULL.

"Achænodon from the Bridger Eocene Beds" was a paper by Henry F. Osborn, giving blackboard sketches of a new skull recently discovered, resembling that of a pig as well as that of a bear, and giving a full description of it, also of its proper place among the mammalia.

THE MOTIONS OF THE ROOTS OF CORN.

Prof. Beals spoke of experiments on roots of Indian corn, starting them in dark places over water. As to their making coils, those started in sand and soil did not make coils. Of those in sand, some were placed with the tip of the seed up, some down; after 150 had started and had grown four inches they were dug up and examined. Three out of 100 sent the primary roots up out of the soil; the main root also came out at a little distance. They were red above soil; they then turned and again entered the soil. Of the 181 set with the tips up, 91 sent the primary roots out of the soil: the primary roots reached a length of about 14 inches in the cellar. He placed 118 kernels in the garden, about three inches below the soil; 97 placed with tips up were slower to sprout than those placed with tips down; 92 out of the 97 sent their primary roots out of the soil.

Prof. Beals also placed 20 Lima beans in a cellar, and the conclusion come to is that they should be placed point down. Many of them took curious courses, some running out and again entering the sand. Some planted in the open air acted much in the same way, showing that Indian corn and beans should both be planted with points downwards.

ILLUSIONS OF MOTIONS.

Mr. H. P. Bowditch, in his paper on this subject, referred to the illusion of watching objects from a passing train, then casting the eye to the floor of the car, and the same seeming to move away from the observer. Exhibiting some illustrations of his remarks by apparatus and charts, testing the eyes of the audience, greatly to their amusement, and occupying considerable time

Remarks by Messrs Oliver, Stevens, Mills and others, followed, discussing the many different illusions to the human eye, arriving, however, at no conclusion.

The abstract of a paper entitled, "An Examination of

SOME CONTROVERTED POINTS IN THE PHYSIOLOGY OF VOICE,

Especially the Registers of the Singing Voice and the Falsetto," was read by Dr. T. Wesley Mills, Assistant of the Professor of Physiology of McGill College, and formerly Chemical Assistant of the Throat and Chest Hospital, London, Eng. The divisions of the subject were: (1.) The functions of the epiglottis in voice production. (2.) The influence of the trachea on pitch. (3.) Influence of the supra-glottic chambers on pitch. (4.) The production of the falsetto voice. (5.) The registers of the singing voice. After the critical examination of all the principal modern views on these subjects, the author states his own conclusions, which are in a condensed form, as follows: (1.) The epiglottis is a feeble resonator and modifier of sound, but does not appreciably affect pitch. (2.) Pitch is not materially modified by the trachea. (3.) The supra-glottic chambers always materially influence the pitch of the voice. This latter view is new to science. (4.) Falsetto voice production demands closure of the glottis, posteriorly always and generally also anteriorly also, while a central ligament, alone, of the vocal cords, vibrates, and through only a portion of their breadth. (5.) In order to determine the question of registers of the singing voice Dr. Mills had examined, with the laryngoscope, 50 persons of varying musical ability and had tabulated the results. His observations confirmed many of the conclusions of the distinguished teacher of vocal music, Garcia, and those of the accomplished Madam Seiler. The paper, which is of great interest both to physiologists and musicians, will appear in the October number of the *Archives of Laryngology*, published in New York.

C. V. Riley read a paper on

OBSERVATIONS ON THE FERTILIZATIONS OF YUCCA.

He said that ten years ago he published his first paper on this subject and now gave a recapitulation on account of much criticism. The stamens of Yucca are too short to send the pollen on the longer pistil. He pointed out the singular character of the reproductive organs of the female moth (Pronubia) illustrating fully the ovipositor on charts, greatly enlarged, as well as flowers and seed vessels of the Yucca. He explained very fully how the moth deposits her eggs in the pistil and seems to be very careful to bring the pollen from the anthers to the pistil. The Professor claimed that the Yucca would not be fertilized were it not for the careful work of this moth, and also that the larva could not live if the flower was not fertilized, as the larva lives on the seed. He showed some seed pods and pointed out the different shape of those in which the larva of the moth were working a change in the shape of the pod, causing a contraction in the middle while the normal shape is regular. Botanists have described this contraction of the pod as characteristic of the species, while it is simply a deformity caused by the moth.

CROSS HEREDITY FROM SEX TO SEX.

Mrs. A. B. Blackwell, of Somerville, New Jersey, read a paper on Cross Heredity from sex to sex. She pointed out that there is much evidence that each organic cell and organism assimilates food, builds structure, and performs functions under the same law of equal action and re-action that rules inorganic nature and maintains the balance of work among correlated energies. Thus each higher organism is differentiated to perpetuate, not another organism like itself, but incomplete elements, which, co-operating with complementary elements, can establish the new organism. Hence a permanent moving equilibrium of male and female influence in the new being, and by the law of averages each determines the sex in about equal numerical proportions. Also there is a well known family resemblance among brothers and sisters which underlies even unlike physical details and various mental ability, and is often an obvious balance of the dissimilar characters of the parents. Mixed races are the conspicuous blending of both types of progenitors. But since special characters are entailed to the same sex, exclusively, then a corresponding inheritance of more general characters should be entailed to the opposite sex distinctively, if the balance is maintained. Several classes of facts were given by the writer in evidence of cross inheritance. With feeble mothers and strong fathers, daughters at birth, have an apparent advantage over their brothers. But if the inequality is reversed in the parents, the sons begin life better endowed than their sisters. If parents have strongly marked contrasts, the sons oftenest resemble the mothers, the daughters the fathers. When this is not evident, intimate acquaintance will often bring out cross inheritance in some other form of compensation. Idiosyncrasies and traits independent of sex are oftenest reproduced by cross heredity. In mixed races, Indian and negro, blood is presumably a male inheritance; and the women, as a class, are certainly lighter, and more Caucasian in features than the men. But in special cases, where the mother is white, the male children more often resemble the whites. The same law holds in all mixed nationalities to a noticeable extent. There are complications arising from the general blending of many characters, and therefore room for difference of conclusion; yet if attention can be definitely called to the facts, it is believed that the compensation law of Cross Inheritance, from sex to sex, may be definitely established.

This section then adjourned.

SECTION G.

The section of histology and microscopy opened at 2.30 p.m., when Prof. Osler read a paper demonstrating the

"BACILLUS OF TUBERCULOSIS."

Certain diseases of the human body are caused by low orders of the parasitic bacteria. It has been shown that these little bodies are in many cases the cause of disease. In *anthrax*, or *splenetic* fever, which is caused by certain of there minute organisms, the spread of the disease has been successfully treated by inoculation. Professor Koch has lately produced tuberculosis by inoculating with a virus containing the bacillus. The organism is an exceedingly small one, being not more than one-fourth the size of a blood corpuscle. In treating phthisis, or tuberculosis, it is probable that the antiseptic method will come more in vogue. The bacilli may be demonstrated in swarms in the expectoration of phthisical patients.

A short discussion ensued, after which Dr. Louis Elsberg, of New York, presented a paper on

PLANT CELLS AND LIVING MATTER.

To botanists biology owed its first knowledge of ultimate structure and of living matter. The names "cell" and "protoplasm" perpetuate the epoch-making researches of Schleider and Von Mohl. And in accumulation and classification of further biological knowledge botanists have had as prominent a part, and even those of us who are interested only in animal morphology have had to keep some track of the labors of Naegeli, Braun, Cohn, Unger, and many others. It is all the more remarkable, therefore, that the investigations carried on during the past decade which have resulted in proving that all the so-called cells constituting animal tissues are interconnected by filaments of living matter, emanating from these cells, seem to have borne no fruit for the study of plants. It was in the hope of being able to repay histological botany for some of the light it has thrown on animal histology, that the lecturer engaged in the researches a brief account of a few of which was then given.

UTERINE FIBROID TUMORS.

Professor Henry O. Marcy, of Cambridge, Mass., then read a paper on the histology of "Uterine Fibroid Tumors," illustrated by microphotographs. The histological factorage of the uterine fibroid has usually been considered to consist either in very large share of connective tissue with muscular elements 1. 2 fibrous or fibro myomtus tumors. The objects of these investigations have been to more thoroughly determine not only the composition of these growths but also their relation to the surrounding uterine tissues. The conclusions reached as the results of such studies are that the origin of these growths is not in the reproduction of connective tissue cells, having as a point of departure a vessel or nerve, but that it consists of a hyperplastic developement of true uterine muscular fibres, usually arising from several centres, resulting in a multilobular growth and may consist of one or more independent tumors. In their development the fibres are more or less altered in character by compression, and when of considerable size by lack of nutrition. The connective tissue is not usually increased and is often less than that of normal uterine tissue. The growths are very rarely vascular, and depend in their nutrition upon the blood supply of the network of surrounding vessels, which is usually exceptionally prominent, often ectocsic in character. The capsule is composed of the fibres of the surrounding uterine structures altered by compression.

Professor J. T. BURRIL, of Illinois Industrial University, then read a paper on

"VEGETABLE POISONS."

The writer had observed during several years within the closed cells of apparently healthy plants numerous actively moving parasites, resembling certain kinds of the organisms called "bacteria." This, after careful study and investigation, was found to be the rule. Some of the best specimens observed were in the cells of certain mould fungi. In the higher plants the most satisfactory cases have been in the cells of hairs through whose transparent walls everything within can be easily seen. Through another series of investigations it became evident that these bacteria cause disease in plants, such as blight, &c., and to the presence of these little insects is attributed the poisonous nature of many plants.

SECTION H.

THE RELIGIONS OF THE AMERICAN INDIANS.

In the section of Anthropology this morning, the first paper read was that by Albert S. Gatschet on the "Chief Deities in American Religions." The religions of the American Indians are a subject upon which scientific men possess very fragmentary knowledge. The present state of ethnologic science clearly shows that no nations exist on earth devoid of religion. We are prone to connect the idea of religion with morality, but the deity considered as a hero of virtue is by no means characteristic of primitive ages. Different religions are expressions of the different modes in which human beings put themselves in dependence upon visible or invisible powers beyond their control. The most ancient form of religion is that which animates the objects and powers of nature with souls or spirits: originally with the ghosts of deceased persons. They were friendly or unfriendly according as they were helpful or hurtful. These spirits were appeased by prayers, offerings, fasts, pilgrimages, self-tortures, and other acts. These forms of deities at first were very humble and numerous. They increased in power and diminished in number with the advance of civilization. The religions of all tribes discovered in North and South America belong to the category of spirit-worship, mixed with lower forms of anthropo-morphism. Their worship is not a cult intended for the moral improvement of the worshipper. It is propitiation only. The majority of the gods are austere, cruel, remorseless, for they represent objects and powers of nature, and like these show no moral or sentimental aspect. At the time of their discovery, our aborigines had no priests, no ceremonial rites, no religious festivals, sacrifices or temples. This led early observers to declare that the Indians had no religion. Had they enquired for their burial customs, they would at once have detected a belief in a future life. A close examination of the dances and initiation rites would have revealed the fact, that most of them were of a religious character. Comparing the Indian religions with those of the East, the former are less systematic. The myths of several tribes in many cases have become hopelessly mixed up. Among the Indians the deities are numberless. Objects that to us are of little account often strike the imagination of the rude natives through some peculiarity. The principal deities discussed were those of the Aztecs, Central Americans, and especially "Old Martin and Little Weasel," of the Hamath Indians. The myth of Old Martin and Little Weasel, gathered by Mr. Galschet from the Indians themselves, was narrated by him. In looking over the large number of native American sun-myths, we are easily induced to approve the opinion of the Jesuit Father Lafitan, who wrote in 1724, "Le Soleil est la Divinité des peuples de l'Amerique, sans en excepter aucun de ceux qui nous sont connus." The more tribes we explore the more we increase the number of men known to be sun-worshippers. From this inquiry another important result may be gathered: that the majority of all tribes worshipping the sun regard the sun deity as their chief deity. This is claimed to be the principal and a highly important conclusions derived from his researches on the subject, and it was only the imperfect state in which tribal mythology was generally brought to our knowledge that hinders our pushing our inquiries in that direction. In the eastern hemisphere, sun and moon worship has been largely superseded or placed in the background by other deities, chiefly of a moral aspect; but even there the features of these primeval cults are still visible to the trained eye in the religion of many tribes and nations.

SUPERSTITIONS OF THE IROQUOIS INDIANS.

This paper was read by Mrs. Erminie A. Smith, who is connected with the Bureau of Ethnology at Washington and has been for six years among the Sioux Indians, gathering their folk-lore and language. Remarking that a belief in spirits need not mean a worship of them, Mrs. Smith spoke of the Iroquois when first discovered. Their gods were numerous—everything that inspired reverence, awe, terror or gratitude became a god. Some of the most ancient are animals transformed into men, whose descendents still keep their old names. Thunder was worshipped, but their thunder god compares favorably with that of other races. His chief object was to benefit the tribe, but superstitious Indians still offer burning tobacco when a storm is coming on. The West Wind, bringing rain, was also a good deity, while the north wind had a bad character. Echo, the Mars of the Iroquois, gave them victory by repeating their war cries. Then there was the Holder of the Heavens, who brought the six Iroquois tribes out from the earth. The idea of the "Great Spirit" and of the "happy hunting ground" was gathered from contact with white men. The Iroquois believed in three sisters, goddesses of corn, beans and squashes. They are still appealed to as "our life, our supporters." There were great heads, with argus eyes, and there were stone giants, at last exterminated. There were the Pygmies, who had carved out the beauties of nature. It cannot be said what is fact and what fiction in the stories of Hiawatha and Atotarho ("the Entangled.") Perhaps several Hiawathas are referred to in the legends; the apotheosis seems to be of modern origin. Mrs. Smith finds nothing showing a belief in a separate spiritual world before the white man's arrival. The word for heaven is a literal translation of the Christian idea, meaning "in the sky." The idea of evil spirits inhabiting living forms only came with the whites. Speaking of sorcery, the best Christian among the Indians known by Mrs. Smith told her that he had lamed a thief by pointing at him. The Iroquois have many stories of witches among them. All these myths should be treated reverently, as the strivings of the infant mind after the "unknowable!"

The section then adjourned.

THE INDIAN BELIEF IN GOD.

In discussing the papers of Mr. Gatschet and Mrs. Smith, yesterday afternoon, Mr. Dorsey said that he had found a shadowy belief of a supreme, presiding deity, among a few Indians, but never formulated. There is no belief in a Trinity.

HOME LIFE AMONG THE INDIANS.

Miss Fletcher gave her personal experiences of a life among the Omahas, Ogalallas and Brulas. After studying archaeology a few years, the speaker concluded that the only way to read the past was through the present. Consequently she divested herself of all theory, and became in every respect an Indian woman. The Omahas live in great comfort, and afford a fine field for study. Miss Fletcher was accompanied by an Omaha girl, and illustrated her remarks with a very large number of specimens.

In explaining the home life of the Omahas, the lady began with the tents, and mud-lodges. The manner of getting food and clothing was graphically described and the curious custom of giving away property after it was accumulated. Fortifications were also mentioned and the habit of cachy children. Miss Fletcher then proceeded to explain the hunting customs and ceremonies. Everything was done in a most scrupulous order. In the Indian life the sacerdotal idea as a separate structure has not even budded. The hunt brings out better than anything else all the side of their daily life, social structure, and religion. The hunting camp, drawn by Mr. Dorsey was explained, the sacred tents and the sacred pipes. Miss Fletcher then proceeded to recite a beautiful story by which she received the name Man-she-hah is, the high soaring eagle, the one who sees the coming day. Tent making and tent life came next, including the mode of erecting, entering, receiving calls, entertaining, storing supplies, sitting, decorating and dressing children. The clothing of men and women was minutely described, and the methods of preparing all sorts of home work. The closing remarks of Miss Fletcher were devoted to the minutiæ of Indian family life, and was of intense interest. The hall was crowded, and a breathless attention for an hour was the best applause which an intelligent audience could give to a devoted woman, who added a graceful diction and an enthusiastic manner to a perfect knowledge of her theme.

"CEREMONIAL WEAPONS" IN FLORIDA."

Mr. A. E. Douglass contributed a paper on "A find of ceremonial weapons in a Florida mound." The said mounds of Florida have been neglected, and are being fast broken up by agriculture. The writer excavated about forty of these last winter, and found abundant relics. The mounds are from 10 to 23 feet high. In one was a large number of "celts," some of which are now exhibited, and are of workmanship that the present day could hardly excel. There had been 20 burials in that mound; each cluster of bones was surmounted by the skull, and all encrusted with red paint. Of arrow and spear points less than 20 werefound in all the mounds. This although no stone implements except arrowheads are mentioned as used by the Indians when Florida was discovered. The most interesting discovery in that exploration was in Banner Mound, in a locality cultivated from early British times, say 1770, till the Indian wars of 1837-42; the settlers were then driven off, and the region is now a beautiful park. The bushes being removed, the surface of the ground was raked over—resulting in the find of what seemed to be a stone brooch. On the second day were found eight beautiful ceremonial weapons known as banner stones; these are the only ones heard of in Florida, and it was probably the hidden store of some manufacturer. There was one evidently centuries older than the rest, and it may have been used as a pattern. The banner-stone consists of a tube of stone with a flange on each side—the whole almost circular in form. They cannot have been used as weapons. There had been no burials in that mound, and there were no other objects of interest.

Prof. PUTNAM said he did not know why these stones should be called ceremonial weapons; he believed them to be ornaments, worn as pendants on the breast.

Miss Fletcher had seen them worn as such by modern Indians.

Prof. MASON said that this did not prove that they were made on purpose for ornaments; sardine tins were worn in the same way by the Indians. (Laughter.)

RELIGIOUS CEREMONIES OF THE DAKOTANS.

Miss FLETCHER, describing the religious observances of the Ogalattas, confined herself to the sun dance. Necessary to a sun dance is a leader, and in the dance described a young man assumed that function. All the minute preparations made by this young man, to secure the buffalo hide, necessary to the ceremony, his prayers, fasts, and "tabu" requirements were familiar to the speaker. The time of the dance is the budding of the sage brush. Some corrections of the word medicine-men were made, including prophets, sorcerers, and doctors, who are quite distinct. The manner by which the leader was selected and prepared was clearly explained. Miss Fletcher quite eloquently dwelt on the enthusiastic manner of Sorrel Horse, the leader. Invitations were sent out to the tribe. Preparations of implements and grounds were made, 8,000 Indians assembled and arrayed themselves in the sacred circle. Tortures and preliminary ceremonials were enacted. Great gifts were made by the leader. Dances under their leaders and accompanied by their servitors: at the setting of the sun begins their consecration ceremony. The men were painted red and highly decorated. The ground, denuded of all vegetation, is smoked with sweet scented grass. The sacred utensils are consecrated by a series of motions. Then comes the prayer for the people in a chanting tone. The leader explains to Miss Fletcher that the praying man is just like the white people, who, not knowing how to pray, get a man to pray for them. The priest prays for health, for long life, for children and for wealth. Children born after such ceremonies are deemed especially sacred. The second day, all the dancers gather at the sacred tent. All chant their prayer, and the priest goes out to summon the people. A master of ceremonies is appointed who chooses their associates. These select and mark the sacred tree. The sacred pipe is laid at the foot. The priests then go out and gather around this hallowed object. After ceremonies of smoking the tree is cut down amid the shouting of the people. Silence then ensues to the close of the dance. The pole is set in the circle of the camp.

The paper was then deferred to Monday.

SECTION I.

INVESTMENT OF CAPITAL IN FOREST CULTURE.

Dr. F. B. HOUGH read a paper on this subject, in which he pointed out the advantages to capitalists of forest culture, as affording a surer and safer investment than any other. After taking a general view of the mining, manufacturing, commercial and agricultural industries as investments for capital, Dr. Hough took up forest culture, which has been followed with very profitable results in various parts of Europe, while in the prairie country of this continent it has been commenced with good results. At present prices, and upon bottom lands, grain and grasses yield the best investment, but even now tree culture can be carried on profitably upon unproductive land where nothing else will grow. However broken and stony the surface may be, if there is soil enough for the roots of trees they will grow equally well as where it is entirely smooth and clear of stones. It is in fact this property of drawing its nourishment from greater depths than the roots of the grain can reach, that renders forest culture profitable in some places where the surface soil is barren. We often find a magnificent growth of pine upon a sandy soil hardly worth owning when the timber is cut off, as the term "pine barrens" indicates. There are everywhere waste places that do not admit of ploughing, and worth but little for pasturage—in fact being idle and unproductive—which, if properly planted with trees, would be gradually producing what might at its maturity be worth much more than the cost of starting and the interest upon this investment. Aside from the incidental effects in the improvement of waste places, the renewal of fertility in exhausted soils, the maintenance of water supply, shelter from winds, &c., the profits from timber culture may, even at present prices, yield a reasonably fair, and, in some cases, a very liberal return. The investment can only be undertaken by those who can wait for the growth of trees, which seldom is less than twenty, and may be several times twenty years, in reaching maturity; but when this time comes the aggregate returns will be found to compare favorably with those of agriculture for a like period.

A NEW YORK COLLECTION OF FORESTS.

Prof. ALBERT S. BICKMORE, Superintendent of the American Museum of Natural History, gave a description, illustrated by a number of large and magnificent photographs, of the collection of the various specimens of American trees, with which the liberality of Mr. Morris K. Jesup has endowed the Museum of Natural History in Central Park, New York. The collection of the specimens was entrusted to Prof. Chas S. Sargeant, and was made of the best single tree of each species that yet remained standing, and was forwarded to New York with the utmost care. Each specimen consisted of a portion of the trunk about six feet in length covered with the bark as in the natural state, and each specimen shows a longitudinal and transverse section. Each one is accompanied by the leaves, fruit, flowers, &c., of the tree, together with a description of its locality and habits of growth. There are now about three hundred and seventy-five specimens collected, which are exhibited in a department of the museum, a structure almost entirely metallic and fire proof.

Dr. Hough, Secretary of the section, having announced his intention of leaving for home to-morrow, Mr. Dodge was elected in his place.

The section then adjourned.

INTERNATIONAL STANDARD TIME.

The section, upon reassembling took up the discussion of Mr. Elliott's paper on the above subject.

Mr. Sandford Fleming, C.E., said he cordially agreed, in the main, with the views expressed yesterday by the President. It was quite clear that no single society or association could succeed in establishing a standard of international time; that must be done by a general convention of representatives of various governments. With that view it is proposed, as soon as the question of the prime meridian is settled, to have a convention at Washington, and the American Society of Civil Engineers, at their meeting last year, appointed a special committee, with himself as chairman, to bring the matter to the attention of this Association. A few weeks ago he was in Europe, and, not expecting to be able to attend this meeting of the Association, he had written a letter to the President in reference to the subject. (Mr. Fleming read the letter.) Since this letter was written the Congress of the United States had passed resolutions looking to an early international Congress on the subject, and in all probability a prime meridian for the use of all nations will be established, or recommended, before this Association meets again. That done, we shall have the key for a proper time system for the world. As chairman of the special committee of Civil Engineers, he would suggest that this Association appoint delegates to attend the Convention to be called at Washington by the President of the Society of Civil Engineers

Dr. Brydone Jack, of the University of New Brunswick, said the first step was to get some expression as to where should be the zero meridian. He concurred in the suggestion of the President that, in order to avoid jealousies among the nations, it should be at Behring's Straits. He also thought it would be more convenient to divide the day into twenty-four hours instead of twelve, as at present.

Mr. Kingsford, Ottawa, referred to the remark of Biot about the "geographical selfishness called patriotism." Why should we destroy the labors of all our geographers by the adoption of a new meridian? In the meridian of Greenwich we have a tangible fact upon which all our maps are constructed. He believed it would be preferable to have the hours of the day numbered from one to 24 instead of from 1 to 12, as at present. He was opposed to any government imposing a new standard of time upon the people; leave that to the railway and telegraph companies to regulate for their own convenience. In the United States there are many able astronomers, and the railway companies should apply to them to help them out of their difficulties. It was not for government to disseminate information on this subject as if the country were only a Sunday-school. The proper course for this section to take was to ask the Association to appoint a delegate to the Convention to be called by the Society of Civil Engineers.

Prof. YOUNG thought it was desirable and attainable to have every man's watch show the same hour and minute at the same time throughout the world. He did not think there would be any national jealousy in the United States to the meridian of Greenwich, or one twelve hours' distant therefrom, as Behring's Straits, being chosen. Railway and telegraph companies might need a local time, but for scientific purposes universal cosmic time would be a great advantage.

Mr. FURNOW suggested that one time table be adopted for this continent.

The President remarked that although the United States Post-Office Department had adopted a single standard, that of Washington, they were quite ready to change it in favor of any other better standard which might be generally agreed upon.

Mr. Fleming said the difficulty of a general time would be overcome by the adoption of a cosmic day of twenty-four hours, with a uniform time system for the whole world. In answer to questions sent out to various railway corporations, the Secretary of the Society of Civil Engineers had received a letter from Mr. Van Horne, General Manager of the Canadian Pacific Railway, which extended over fifty degrees of longitude, and when completed, would be twice the length of any other railway in the world. Mr. Van Horne heartily concurred in the system of time meridians proposed by himself (Mr. Fleming), and had already introduced this system experimentally on the C. P. Railway with the happiest results. The proposed time meridian "R," passing a little to the east of Ottawa, would give the local time of the capital of the Dominion to the lines in the Provinces of Quebec and Ontario east of Lake Huron; meridian "S" striking the north shore of Lake Superior a short distance west of Thunder Bay, the next "T," striking the capital of the new province of Assiniboine, and the fourth, "U," falling near Lake Kamloops in British Columbia, thus corresponding with the natural principal divisions of the railway, and, approximately, with the political divisions of the country. Mr. Van Horne continued, "I can see no substantial difficulty in the way of the application of this system to the railways of the United States." A few weeks ago he heard of a case in which a fatal accident occurred by two trains running into each other, when they were doing exactly what they were instructed to do, because there was a difference of two minutes in the time of the two railways. He would therefore move the following resolution:

That the American Association for the Advancement of Science is desirous of expressing its satisfaction with the resolution of the Congress of the United States authorizing the assembly of an International Conference "to fix on and recommend for universal adoption a common prime meridian to be used in the reckoning of longitude and the regulation of time throughout the world." That the Association recognizes the importance of the other steps taken with a view to the establishment of a general system of standard time, and having been invited to take part in the Convention to be called at Washington for the purpose of determining the time standard, which it would be advisable to adopt, appoints the following gentlemen to act as delegates:—Dr. T. Sterry Hunt, Ormond Stone and Chas. Carpmael.

The resolution was adopted, with the understanding that it should be transmitted to the General Committee, to be by them considered, and to take such action as they may think proper.

The section adjourned.

ARRIVAL IN QUEBEC—DELIGHTED WITH THE JOURNEY—A GLORIOUS DAY FOR THE TOURISTS.

(From Our Special Commissioner.)

QUEBEC, August 26.—We left the wharf at eight last night 400 strong. The moon shining brightly made the trip very pleasant, and it was late before many retired. Owing to the unfortunate confusion as to berths, midnight saw the floor carpeted with slumbering science. There was a glorious sunrise, and the day is very fine. All the strangers are greatly delighted with what they saw on the river. We reached the wharf at eight. While one batch of passengers was breakfasting, a deputation of the Citizens' Committee came on board, consisting of the Hon. Mr. Langelier, the Mayor, the Hon. John Hearn, the Hon. D. A. Ross, Dr. Marsden, Dr. Burroughs, Messrs. R. R. Dobell, Whitehead, Belleau and Price, and were received by Dr. Sterry Hunt. We are going to Dufferin Terrace, the Citadel, Laval University and round the harbor.

Noon.—The excursionists afterward ascended the elevator to the Esplanade, when the Mayor read an address of welcome to Quebec and introduced Mr. Lemoine, President of the Historical Society, and the President of Institut Canadien. They then inspected the Citadel thoroughly, entrance by the sallyport being allowed by Colonel Irwin. He and the Mayor are indefatigable in showing and telling everything interesting to the party. The Marquis of Lorne and Princess Louise wished to receive the Association, but had arranged to visit Mr Joly and could not find him to postpone the visit. They drove out of the Citadel while the visitors were there. The strangers showed the greatest interest and delight at the magnificent views, and on leaving the citadel inspected the Notre Dame and Seminary churches, the Mayor explaining everything throughout. They were received by Father Hamel in Laval and shown all the university, museum, pictures and library. They are now setting out on the steamer "Canada" to sail round the harbor, visiting St. Romuald, Levis, the graving dock, Montmorenci Falls, and the harbor improvements at the mouth of St. Charles. They luncheon on board, the Mayor proposes the health of the Queen, President, Governor-General and guests. The Hon D. A. Ross gives an address and Mr. Lemoine gives familiar notes on ancient and modern Quebec and its environs. The band of A. Battery are engaged.

IN OTTAWA.

OTTAWA, Aug. 25.—The excursion to Ottawa left Mile End at 8 o'clock. On board were nearly three hundred guests, amongst them Drs. Dawson, Carpenter, Hall, Rae, Saunders Gilbert, Moore, Professors Grey, Newberry, Boulton, Brewer, Rowalensky, Captain Dall, Mr. Putnam and other leading scientific men. The journey was very pleasant At the various stopping places members of the party jumped out and picked up specimens of the flowering weeds that carpeted roadside with bloom. The beauty of the country was the subject of conversation as the train sped away at forty miles an hour. At one of the stations a deputation from Ottawa got on board and distributed illustrated programmes and guide books. At Buckingham where a number of cars laden with red and green apatite was standing on a siding, frantic scrambling was made for specimens, and the standing joke for several minutes was the enquiry, "Have you got an appetite?" The party arrived in Ottawa at 11.45, where, owing to some misunderstanding, no one was waiting to receive them, consequently the party walked to see the Chaudiere Falls a few hundred yards away, where they were met by teams which drove them around the sights of Ottawa.

THE ENTOMOLOGICAL SOCIETY OF ONTARIO.

ITS ANNUAL MEETING IN MONTREAL.

Thursday afternoon the annual meeting of the Entomological Society of Ontario was held in the Natural History Society's Rooms, the President of the Society, Mr. William Saunders, in the chair. There was a very good attendance, including many ladies. After the Chairman had called the meeting to order Mr. E. Baynes Reed, the Secretary-Treasurer, read the annual report, which gave the reasons for holding the meeting outside of Ontario. It had been felt that the selection of Montreal for the meeting of the American Association for the Advancement of Science and the consequent gathering of distinguished entomologists from both sides of the line would afford an opportunity not to be missed and accordingly the Hon. S. C. Woods, treasurer of Ontario, had been applied to for permission to hold the meeting in Montreal, to which he gladly consented. It was, therefore, a point of no small importance in the history of the society, and they heartily welcomed all their foreign brothers. The report referred to the endeavor made in the Dominion Parliament last session to get books for libraries on the free list, which was unsuccessful, but they were hopeful that in the next session they would meet with better success, for the imposition of this duty did no good to any one, as our Canadian publishers did nothing in that line. It expressed regret that the Entomological Section of the American Association had been merged in Section F. (Biology) which might prevent the adequate discussion of their particular branch of natural history, and hoped that members would endeavor to form a club for the more frequent discussion of their beautiful science.

It was decided that the report should be printed.

The financial report showed a balance of $55.

The annual report of the Montreal branch was considered in every way satisfactory.

The election of officers was then proceeded with, resulting as follows: Mr. Wm. Saunders, London, Ont., President; Mr. J. G. Bowles, Montreal, Vice-President; Mr. E. Baynes Reed, Secretary-Treasurer, London, Ont.; Rev. C. J. S. Bethune, Port Hope, Messrs. J. A. Moffat, Hamilton, James Fletcher, Ottawa, F. W. Fyles, Cowansville, P.Q., J. M. Denton, London, W. H. Harrington, Ottawa and W. Couper, Montreal, composing the Council. The auditors chosen were Messrs. Chas. Chapman and H. Bock, and the president was reappointed editor of the *Canadian Entomologist*.

The PRESIDENT then delivered his annual address, being loudly applauded on rising. Referring to the fact of the meeting being held outside of Toronto, he said it was no ordinary era in the society's history, and he extended his felicitations to all who were strangers. The insect that had attracted the most attention during the past year was undoubtedly the Hessian fly, which had injured the wheat crop in Ontario about 20 percent, or to the value of many hundreds of thousands of dollars. Since 1878 they had been comparatively free from this scourge, but now it had returned in very great magnitude. Having described the manner of the growth of this dreaded pest, and their effect on the plants they ruin, he said that no successful measures had yet been devised for their cure or killing, some people advocating the immediate reaping and thrashing of the wheat; others were for burning the field as it stood, but it should be remembered that this would also kill the many friendly parasites who were the farmers' friends. Some people were in favor of harrowing the stubble, and thus clearing the ground. But in his opinion the only effectual remedy was late sowing, which rendered the wheat better able to withstand its enemy. He had discovered in Ontario what many people doubtless thought did not exist in this country, viz., the phylloxera which had caused so much damage in France to the vines. He explained the time and manner of the growth of the insect and the way it went to its deadly work. He showed some examples of the Diplosis, the only parasite inimical to the phylloxera, and expressed the hope that it would be extensively distributed in districts where the latter prevailed. He said that it was an error to suppose that the damage to the fruit crop was caused by insects. It was the very wet weather and low temperature in the spring. We anticipated an excellent crop in 1883 as was generally the case after a short year. Up to 1874 California was regarded as the fruit-growers' paradise, but since then the ravages of insects have been terrible. The state legislature was making provision for their prevention. He recommended the same in Canada.

It was decided to have the address printed in the usual way.

On motion of Dr. Hargin that some member be appointed to call together more frequent meetings of the Society, and of Entomologists generally, Prof. Linton was chosen to the post.

The meeting adjourned after examining a number of specimens produced.

MR. VENNOR ON SEPTEMBER.

HE PREDICTS EXCESSIVE HEAT AGAIN—STORMY AND WINDY WEATHER.

The following are Mr. Vennor's predictions for September:

There will be excessive heat again during the fore-part of September, where heat was experienced during the last of August and entry of July. The month enters on a Friday—an unlucky day of the week, or "so the story goes." Stormy weather is probable on both sides of the Atlantic Ocean.

FIRST WEEK (1st to 7th).—Now, mark. Foggy weather will be experienced along the North Atlantic coast and Gulf of St. Lawrence, with thunder-storms and probably sultry weather over the North Atlantic. Sultry and showery up to 6th day. Cooler change night of 6th or on 7th, with possibly frosts in New York State and Province of Quebec, Canada

SECOND WEEK (7th to 14th).—Cooler and pleasant weather. Days varying from warm to sultry; evenings and nights generally cool. A favorable week in the majority of sections. Cold in mountainous regions. Probably a good deal of rain in Province of Quebec and Lower Provinces. Stormy on Newfoundland coast.

THIRD WEEK (14th to 21st).—A rather stormy and unsettled week, with frequent rain falls. Windy weather probable in Gulf of St. Lawrence and North Atlantic. Fair seasonable weather in the majority of sections. Wet in northern sections about 20th and 21st. Stormy and cold weather in England and Scotland.

FOURTH WEEK (21st to 28th).—Temperature probably fall-like. Windy with very cool evenings and nights (probably frosty) in Northern and Western sections. A good deal of rain in North-West and Western States. Stormy and wet in Gulf of St. Lawrence and along North Atlantic coast.

CLOSING DAYS (28th to 30th).—In all probability wet and stormy in the majority of sections. Crop reports less favorable than expected. Wretched weather in Maritime ports and Newfoundland.

[NOTE.—The wonder is, not that our predictions fail for certain dates, but that they are correct in so many.]

FAITH CURES.

(To the Editor of the Witness.)

SIR,—I read an article on Faith Cures in the paper issued August 8th with interest. Some cases of cure following believing prayers came to my personal knowledge during the last five years, which caused me to look into the subject carefully. It is one which repays investigation, nor can those who have read or thought little about it have any idea how widespread in the Christian Church is the belief that the Lord meant his followers to be free from the pre-occupying hinderance of disease. Christ is the same yesterday, to-day, forever. "I have given them Thy word," He says before His death, and again, "I have declared Thy name." That is, Christ had manifested by life and teaching the character of God. What then is the mind of God with regard to sickness as revealed in Christ? It is undoubtedly to *heal*. See, for instance, the case of the epileptic boy. When the Lord came down from the Mount of Transfiguration, and was met by the father of this boy, whose case had baffled the disciples, He, who had been talking with Moses and Elijah on "excellent glory," was grieved, and said "O faithless and perverse generation, how long shall I be with you and suffer you!" Afterward, His disciples asked, "*Why* could not we cast him out." Jesus said, "Because of your *unbelief*. If ye had faith as a grain of mustard seed." &c., Matt. xvii., 20 In the same connection He says "All things are possible to him that believeth." In no case did the Saviour bid the sufferer to be resigned. "He healed all that had need of healing." Nor did He, who is our example, suffer from sickness himself. Paul's thorn seems to have been rather a mortifying than a disabling affliction, and he received from the Lord a distinct answer when praying for its removal. Now, these invalids who sadly say perhaps it is the Lord's will that I should suffer are not, and should not, be really resigned, for if any treatment promises reasonable hope of cure they hasten to undergo it—even nature teaching them that while in the body the right thing is to be well. Paul says in Romans viii. 11th, "But if the spirit of Him that raised up Jesus from the dead dwell in you, He that raised up Christ shall also quicken your mortal bodies by His Spirit which dwelleth in you." This cannot refer to the spiritual body, but is in truth our present tabernacle. James calls on all who are sick to send for the elders and let them pray over them anointing with oil, with the promise that the prayer of faith shall save the sick. What warrant has any sick person for disobeying this command? The first cure which came to my knowledge was that of a lady—one remarkable for simple faith, and consecration of life—who was well known to me. About five years ago she was the victim of a tumor, which could not be removed on account of its position. It enlarged very rapidly, and became so obtrusive that she left her Southern home and went to stay in New York State, expecting shortly to be relieved by death, her Baltimore physicians having told her that there was no hope. There she met with an elderly medical man, whose successful practice had not made him cold to spiritual matters. In conversation he told her that he did not think it was God's will to remove her from the earth, where her Christian work was so much needed. He prayed with her, and bade her pray for herself. God gave her confidence that it was His will she should recover. The tumor from that day began to go down, and in six weeks was gone. Her Baltimore physician was greatly astonished, and asked her if she would be willing to state her case before a number of medical men in that city. She has been in good health ever since, and has been happily married about two years. There are so many other living witnesses to the power and willingness of the Lord to heal that this truth should not need my poor advocacy.

A BELIEVER.

Montreal, Aug. 15, 1882.

BATTLE WITH AN ANACONDA.

A few years ago, an immense anaconda or water-boa was received at the garden in Regent's Park, London, brought in a barrel on board a steamer from Central America to Liverpool, and forwarded thence by rail. This reptile, as perhaps my readers are aware, is the largest of the serpent tribe, inhabiting the swamps of tropical America, and sometimes attaining a length of thirty or forty feet, it may be much more. It is one of the constrictors—that is to say, it is non venomous, and kills its prey, like the boa and python, by crushing it within the evolutions of its powerful body.

In the British museum there is a fine stuffed specimen, about thirty feet long, represented in the act of seizing, though not constricting, a peccary. The subject of my tale measured twenty-three feet in length, and in girth was equal to the circumference of a man's thigh—a formidable customer, capable of swallowing a sheep. Prepared for his reception, with the floor duly gravelled, and a tank with water, den No. 3, on the left-hand side of the reptile house, counting from the entrance door, was allotted to him; and within the cage is a stunted tree, up which the large serpents are wont to climb. The top of the cask unscrewed, the creature was allowed to find his way into the cage through the small aperture behind.

Roaming about in the full enjoyment of his new-found liberty, he presently turned round between the tree and the front of the cage—a space of several feet—in such a way that the bight of his body, to use a seafaring expression, lay within this space. Here, feeling the contact of the glass on one side and the wood on the other, he suddenly expanded his coil, probably in the sheer luxury of being able to stretch himself, and pushed the front of the cage out! Not simply the glass itself, which was not broken, but the heavy frame-work in which it was fixed, was forced away from its connection with the surrounding beams. Hereupon several of the spectators had the presence of mind to rush forward and catch the sash before it could to the floor.

In this way they supported it as well as they could with hands and knees until fresh assistance arrived, for the weight was too great for them to lift it back into position again; while the reptile inside, excited by the shouting and commotion, was dashing about furiously in all directions. This scattered the gravel about; and it was then found impossible to return the frame into its proper place, as the groove was choked with the small stones. Mr. Frank Buckland, aided now by a number of men from all parts of the gardens, still kept the glass from descending, while the keeper and carpenter, who got into the cage from behind, having thrown some blankets over the snake and pushed him into a corner proceeded to scrape away the gravel.

But the anaconda, now thoroughly enraged, contrived to extricate his head from the covering, and before the men could escape, flew at the carpenter and seized him by the shoulder. The keeper courageously turned, gripped the serpent by the throat and forced him to let go, but not until the unfortunate man's arm was terribly lacerated by the powerful lancet-like teeth.

Luckily, the door of the reptile house had been locked when the first *contretemps* took place, so that no casual visitors were witnesses of the scene; otherwise fainting women and horror-stricken men would doubtless have added to its confusion. By this time the groove was clear and the frame temporarily secured, so that the carpenter made good his exit, while the keeper, watching his opportunity, flung the creature from him and jumped out.

PERSONAL.

Baron Wilhelm Rothschild, of Frankfort, returned his last year's income at £239,400, while his brother, Baron Meyer Carl, confessed to £228,000. The amount of their income tax exceeded £14,000.

The hotel-keepers of Bayreuth had a lesson given them by Baron Rothschild of Vienna, who went there in his own saloon car to attend the first performance of "Parsifal," and not only dined but slept under his "own roof."

Mr. Henry Fawcett and Mr. Emile de Laveleye have received the honorary degree of Doctor of Political Economy from the University of Wurzburg, on the occasion of the celebration of its tercentenary.

Dr. Salviati, the celebrated mosaic restorer, is doing President Garfield's portrait in mosaic at his studio in Venice. The mosaic portrait of Abraham Lincoln, now in the Libary of Congress, is from the hands of this artist.

The Imperial *Gazette* announces that the graduates of the Military College at Kingston who secured commissions in the army are to be connected with the following regiments: Sergt. Robinson, Royal Engineers; Sergt. Major Taylor, 22nd Cheshires, and Sergt. Major Skinner, Royal Sussex Regiment.

Mr. Duncan McIntyre, Vice-President of the Canadian Pacific Railway, who arrived at Winnipeg on Saturday, with the Hon. J. J. C. Abbott, and other distinguished visitors have proceeded West with the Hon. D. A. Smith and General Manager Van Horne. The party numbered twenty persons. After returning they proceed to Thunder Bay, Lake Superior.

A COUP D'ETAT.

AN INCIDENT IN THE NIGHT OF DECEMBER, 4TH 1851.

(Translated from "Les Chatiments" of Victor Hugo.)

The child received two bullets in the brain.
We bore him home: the house was small and plain.
On the bare wall there hung a portrait, dress'd
With a green palm-branch that a priest had bless'd.
The aged grandmother was there, alone:
She kiss'd the victim with a piteous moan.
In silence we uncovered every limb,
His lips were open, and his eyes were dim;
And, while his arms drooped, listless, to the ground,
A wooden top within his frock we found.
Deep were the wounds from which we wiped the blood—
Hast thou seen berries bleeding in a wood?
His skull was cloven, as a log is split,
The woman watched us, as we tended it,
Crying: "How white he is! Bring near the lamp:
"God! the poor curls around his brow are damp!"
When all was done, she took him on her knees.
The night was dreary—borne upon the breeze
Gunshots were heard, that told of many dead.
"Come—let us bury the dear child," we said,
And from an antique chest we drew a sheet.
But still the grandam strove to gather heat
In his stiff limbs, beside the embers warm.
Alas! when Death's cold fingers touch a form
All earthly warmth is vain. She bent her head,
Drew off his socks, scarce sure that he was dead,
And, while his feet she fondled in her hand,
She said: "These things are hard to understand.
Monsieur, the child was only eight years old,
And all his teachers loved him, I am told.
When some chance letter reached me from a friend,
The boy would write—but this is at an end!
They kill the children now, it seems, *Mon Dieu*,
Men have turned brigands, then! Can this be true?
Before our window, there, he played at morn—
To-night, my darling from my life is torn,
They fired upon him, *Monsieur*, in the street,
While he was passing—he, so good and sweet—
But I am old; I have not long to stay;
Would God that Monsieur Bonaparte to-day
Had let his soldiers kill me, not the child."
Here, she ceased speaking, for her sobs grew wild,
Soon, she continued with pathetic tone,
"What will become of me now left alone?
Explain me that, kind gentleman. I had
Nought from his mother but this little lad.
Why did they kill him? Can you tell me? Speak;
He never shouted, *Vive la République*.

Silent and grave we stood, with brows al bare,
Trembling before the sorrow of despair.

Thou hast no head for politics, poor dame
Monsieur Napoleon—so, the man I name—
Is Prince, and pauper; and he would fain own
Unbounded wealth, a palace, and a throne,
Hence, wrinkled hands, to sate his lust for gold,
Must sew the shrouds of children eight years old.

GEO. MURRAY.

Montreal.

THE MORNING RIDE.

Along the highway and over the hills,
I ride to Malvern Town,
While the morning taps at the window sills,
As she girds her glistening gown.

Clamp and clatter, and clatter and clamp,
The steeled hoofs rattle and ring,
Swift and steady, to jangle and champ,
As my good steed goes galloping.

All the stars from the blue are blotted,
Backward the mists are rolled;
And the lakes and rivers and runs are spotted
And splashed with scarlet and gold.

Couched in the hills' caresses, lie
The vales in a dewy hush;
But their silence we break as we gallop by,
And wake them with a rush.

We rouse the watch-dog, the barnyard folk,
And rosy maids from sleep,
Till the shutters shake and the chimneys smoke,
And reapers come forth to reap.

What's it to me that my heart is sad
Oft-times for the woes that be?
For I hear earth's choral clear and glad,
And not her threnody.

To the wind, the wind, the careless rover,
I cast my sorrows wan,
As I sniff the scent of the ruddy clover,
And drink the breath of dawn.

Hey! and who would not ride far out
To cleave the strong west wind;
To leave, with the night-world's dusk and doubt,
All bitterness behind?

Hey! and who would not ride with me,
Rejoicing that he exists;
And away from his shadowed spirit see
The sunshine roll the mists?

So over the hills I ride, and over,
And onward still and on,
Sniffing the scent of the ruddy clover,
And drinking the breath of dawn.

J. H. REAGAN.

Elgin, Ill.

THE TRUSTEE.

BY JOHN BERWICK HARWOOD, AUTHOR OF "PAUL KNOX, PITMAN."

(From Cassell's Magazine.)

CHAPTER XXIII.

LOYAL HEARTS

"You won't, dear; no, not really!" exclaimed Miss Ashe, aghast at the magnitude of the sacrifice which her niece proposed.

"I shall do it, aunt," replied Constance, with a sad smile.

"Such a pity!" responded the lady from Leeds; but Constance said nothing, but only looked thoughtful and brave too, in her quiet, girlish way, for heroism is of more sorts than one. Constance had made up her mind. She would do what in her honest young eyes was right. The resolve that she had taken was one that cut her to the heart, but she never flinched, and bore her pain uncomplainingly; and, indeed, what would become of us all without that same sacrificial quality of passive, deliberate courage which our women in such large measure possess? Yes, Constance had made up her mind. There had been tearful moments, anxious vigils, since the day when Frank had come back from London with the news of Ralph Raeburn's death, and with the tidings of the utter wreck and ruin of the fortune that old Mr. Wilmot had spent his life in piling up—all swallowed now by the whirlpool of speculation. Constance had asked herself, poor child, sobbingly, many a time, as her fair head rested on her pillow, in what her duty lay under these altered circumstances, and at last she thought she saw her way—a very dreary way, but still the proper path—clear before her. She must give up Frank Preston. He was rich, and she must be poor. She was no heiress now. Frank—dear Frank—must not be saddled with the burthen of a portionless wife.

Now Miss Ashe, the girl's aunt, was an honorable and stout-hearted a lady as any in Yorkshire, and would have worn sackcloth and made life an eternal fast had she felt sure that conscience dictated the penance; but, though she admired Constance for her resolution, she was not quite sure that her niece had judged aright. Miss Ashe had come to think very highly of Frank Preston. In this change of opinion she was influenced, perhaps unconsciously, by the publicly expressed sentiment of others. The tide of popular feeling at Woolton had decidedly turned in Frank's favor, and nothing had so much contributed to this alteration as the discovery of Ralph Raeburn's rogueries. When the slanderer has been found out, a great revulsion is likely to ensue as to the manner of viewing the slandered. And there were those, a few, who had been true to the young mill-owner while still under the cloud of blame unmerited, and who spoke out louder now, when the scales seemed to have fallen from the eyes of those whom prejudice had blinded to Frank's good qualities. Presently Frank himself rode up to the door of pretty Woodleigh, on which the mellow light of the autumn sunshine fell so softly and so caressingly that day, and dismounted.

Constance grew quite white, white to her very lips, and she shivered as if it had suddenly grown cold.

"You are quite positive about what you said, dear?" asked Miss Ashe, very much as well-meaning people used to ask a martyr at the stake or at the gibbet's foot whether recantation and safety might not be the best policy after all. Constance merely nodded; her heart was too full to permit her to speak.

Then Miss Ashe slipped away, and when Frank entered he found Constance alone, waiting for him. She had dressed herself all in black, without a vestige of ornament anywhere; but never, perhaps, had her golden hair flashed out more brightly, or the gentle beauty of her sweet face been more apparent. Yet there was a sad earnestness in her bearing which struck Frank at the first.

"Why, Constance, my love, I hope nothing has gone wrong!" exclaimed the young man, as the little cold hand rested for a moment in his, and was then withdrawn. Miss Wilmot did not immediately reply. She looked down at the carpet, and nerved herself for the final effort. It was harder somehow than she had anticipated to make the plunge.

"I have been thinking very much, and very seriously," said the girl at last, trembling, but speaking in a steady voice, "about what has occurred, and I have quite made up my mind as to what is right and best for us both, and—fair to you. Mr. Preston, we had better both forget the past, and—and think no more of—the engagement, from which I release you. I am sure, so far as I——"

She ended with a piteous little sob that choked her voice. She had meant to be calm. She had rehearsed the scene over and over again in the solitude of her own room, but it was so different now Frank was half incredulous.

"You are mocking me—trifling with me, dearest," he said slowly: "or can it be," he added, flushing indignant crimson, "that evil tongues are busy again, and that calumny has painted me again as the hypocrite and the designer? If so——"

"No, no, no!" interrupted Constance, as her own color rose and fell. "I have heard nothing of late concerning you except praises well deserved, for they know you better now. It is not that. But now that poor papa's—now that the fortune that was thought to be mine has made itself wings, and is all gone, I should be very mean, Mr. Preston, very base and mercenary, did I not see—did I not feel—that all must be over between us. I could not bear, indeed I could not, to be a drag and a hinderance to projects which—which—and, in short, I——Oh! let us be friends, dear friends, if you will, but—nothing more."

She was weeping now, and had covered her face with her hands, through the slender fingers of which the tears were trickling, but she had spoken out boldly, resolutely, as she thought, although her own voice had rung in her ears like a death-knell. Poor Constance! To her surprise and almost indignation, Frank Preston caught her in his arms, and kissed her cheek, wet with tears.

"My darling!" he exclaimed; "you dear little goose! Answer me one question before you torment us both any more. Do you think that I sought for my bride Constance Wilmot, or the heiress of Woodleigh—that it was your own dear self I loved, or the property?"

Constance tried to release herself, to be dignified and self-assertive, but it would not do, and she could hardly contrive to say, "I have thought it over very constantly, and, however painful, I am sure that it is right to——"

"Right!" said Frank, with energy; "right to rob me of my promised dearest wife, because a scoundrel—poor wretch—has robbed you of your fortune! Why, Constance, my own, this is the very Quixotism of feminine chivalry, though I love you the better for the noble feeling that prompted it. As if I cared a straw—except for your sake, sweet—whether you were rich or poor! and as if I would not give up goods and gear, Highview, mills, money, land, and all, rather than lose the one thing—you can guess what that is, dear Constance—that I really care for in this world!"

Then, somehow, Constance found herself sobbing and clinging to Frank as she hid her face on his shoulder, and all was cleared up between them in some illogical, semi-articulate way, as has been the case with true lovers since the world was a world. Miss Ashe, who was presently summoned, was agreeably amazed to find that concord was restored, and that her niece Constance had been induced to swerve from her recent resolution never to marry, but to wear the willow to the end of her days for Frank Preston's sake.

There was another scene that same afternoon—less romantic, of course, but sufficiently emotional in character—between the squire and Frank Preston. The latter found the master of Langdale Park looking ten years older: a flabby, careworn man, with fresh grey dappling his crisp hair, and unsuspected wrinkles marring the smoothness of his wholesome face. Talks with Lawyer Dawson, much self-communing, and midnight consultations with Clorinda, his wife, had enlightened the somewhat obtuse country gentleman as to the awkwardness of his position, and the serious nature of the liability he had so highly incurred.

"Look here, Preston," he said nervously: "I know now what I had not the least idea of I give you my word, when first that fellow Raeburn went off with the trust funds. If I have been an idiot and a dupe, of course I am ready—quite ready—to make amends if you'll give me a little time. I say you, because of course Miss Wilmot, who is to marry you, will be guided by what you advise. Only a little time, you know. George—Major Mowbray, you recollect—he's quartered at Peshawur just now, and must get leave from the Commander-in-Chief, musn't he, especially as he commands the regiment in old Todd's absence, before he can come over here?"

"You mean—" began Frank, wonderingly; but the squire went on: "A man like me, of course, who has nothing but the acres, and is but a life tenant after all, can't pay up, of course like you regular business men, who do it by a scrape of the pen. But I've written to George in India—wrote yesterday. He must come; and between us we must cut off the entail of Langdale, and sell whatever is necessary—Swaffington and Redscar Farms, and the Vale lands; and I've talked it all over with my wife, and she agrees with me that we must, when Miss Wilmot's money has been repaid, go abroad—draw in our horns a bit—Boulogne or Brussels would do, perhaps—and economise, in fact. But I hope you'll be patient, for it's a slow business to raise the necessary sum when so many formalities lie in the way."

"My dear, kind old friend," said Frank earnestly, "can you think so meanly of Miss Wilmot, or of me as to imagine for a moment that we attribute blame to you, or that we will suffer you to half ruin yourself to atone for the misdeeds of a plausible knave? If Ralph Raeburn—poor wretch!—deceived you, he deceived us also, and you certainly shall not be made the scapegoat for his sins. If you were credulous so were we."

"But the law says——" began the squire dolefully shaking his gray head.

"One thing at any rate it does not say," interrupted Frank Preston cheerfully. "and that is that I am compelled to accept what your just and honorable feeling makes you, squire, so ready to offer. My happiness shall not be cankered by the tribulation of a dear and kind old friend, and I hope that the old Langdale acres may long descend in the old Mowbray line. Anyhow, I will have no hand—and Constance agrees with me—in any scheme for your impoverishing yourself for our benefit. What is lost is gone beyond recall, but I have enough for my bride and myself; so the sooner you write, Squire, to Major George out in India, and set his mind at rest by telling him——"

"By telling him," broke in the squire, fairly crying as he had perhaps not done since he was an Eton boy, "that there isn't a nobler fellow on God's earth, than Frank Preston is, nor a sweeter girl than Constance Wilmot!" And as he spoke he caught hold of Frank's hand, and wrung it hard. "I ought not to profit by your generosity, though, Frank, my boy," ruefully added the squire, after a pause. "I have been a fool, and deserve to pay for it. Take time to think it over."

"There are things which admit of no thought," was Frank's hearty reply. "You shall never be a penny the poorer, dear Mr. Mowbray, on account of this wretched business."

Then there was more hand-shaking, and then the squire went out and came back with his wife, and she too with streaming eyes, but with a natural womanly dignity, thanked the young visitor, Frank stoutly maintaining that no thanks were due.

"We have always been friends. Let us be friends always," he said and went his way leaving lighter hearts behind him at Langdale than he had found there.

CHAPTER XXIV.

"Changed times in Woolton, neebor!" grumbled one working man to another fluffy brother of the craft. "There's the old 'Angel' advertised to be let or sold, the Standing Committee broke up, Vamp the Yankee gone off to London, and t'other delegate to Leeds. Subscriptions had 'most failed, you may guess afore it coom to that."

"It's along o' cloth chaps getting to feel so contented," responded his fellow-croaker. "Don't seem a bit like Woolton, say I, when men and masters work so smooth together; and there's the lad that's made the change. Why I minds the day, not so long ago, the very bairns about the town's streets hounded and hooted after un; and just look at him now, as if he were the prince o' the place!"

And indeed at that moment Frank Preston's open carriage, with his lovely young wife sitting by his side, traversed the crowded market place, while hats and caps were touched or lifted in sign of salutation, and a low murmur of suppressed applause accompanied the progress of the newly wedded pair. It was the first time since their return from the honey-moon trip on the Continent that either Frank or his bride had been seen in Woolton, and the people gave them a welcome that was quite as sincere if less picturesque, as any natives of the sunny South would have done. Very pretty indeed did Constance look, but those were tears of joy and pride that filled her eyes as she saw the sea of smiling, good-humored faces, and then glanced up at her handsome, manly husband, remembering his former unpopularity, and rejoicing that Frank was understood at last. The tide had turned, and though a few inveterate growlers in all grades, from sour old Mr. Jenkins downwards, might still hug their obsolete prejudices, Woolton was no longer unjust to its noblest townsman.

Perhaps in this case the clouds of misapprehension had cleared away more promptly than they sometimes do, but then, to be sure, the march of events had been rapid. Had not Ralph Raeburn's detected rascality served as a foil to Frank's sterling merits, perhaps the change in public opinion would have been more tardy and more gradual. But as it was, the roughest and the dullest of the mill-hands had begun to realize the truth that Woolton had something to be proud of in the possession of such a citizen. Very likely it was less on account of Frank's open-handed liberality or his genial sympathy with the unfortunate that he appeared in a new and better light than of old, than because of the dash of romance without which it is all but impossible to hit the popular fancy. Frank Preston was admired now, not because he had tried to shield his poor neighbors and mill-hands from dirt, drink, and disease, not because of his timely rescue of those who, in Blogg's Buildings, were about to be driven forth into the snowy streets, nor even because he had risked his own health and scattered his money broadcast in stemming the tide of the cruel "fever time" that sultry summer.

What really did stir the very depths of the tough, proud, self-contained Yorkshire nature was the fact of Frank's disinterested behaviour. Constance Wilmot had been reputed a great heiress. Her trustee, a plausible rogue—a rogue whose varnish had been too smooth and thick for even Yorkshire eyes to see through it—had robbed her of every available sixpence, and then Frank Preston had married her—and had insisted on marrying her—portionless as she was, for Woodleigh and its few acres did not represent three hundred a year. Then, too, it was buzzed abroad that Frank, as the husband of Constance, had the squire on the hip, could enforce a repayment of his wife's trust fund, and had nobly refused Mr. Mowbrae's offer to discharge his legal liability.

"Could ha' sold us up at Langdale, stock and stoan!" was a frequently expressed comment. "But young Frank—'most too good for this world—wouldn't have a bit o' the squire's brass. And they say at Langdale, if there be a gentleman on earth, it be young Measter Preston: an' no wonder!"

The end of all this sort of talk was that in Woolton streets the excited people on the day of Frank's return, with his bride by his side, first bowed and murmured their applause, then cheered, and then wanted to take the horses out of the carriage, and draw the carriage themselves, just as if Frank Preston had been a very popular member just elected for a seat in Parliament. But Frank laughingly declined the proposed compliment of being drawn by volunteer hands to the Guildhall of Woolton. He stood up in his carriage, took off his hat, and his color mounted to the cheek that thought and care had paled so often, as he spoke a word or two to his cheering audience.

"I am so glad," he said, "dear friends, fellow-townsmen, and kind neighbors, that you receive me and my dear young wife here in so neighborly and hearty, ay, and so Yorkshire a fashion. I am pleased to be back among you, and pleased to see, by the signs of your esteem, that you and I understand each other now, and can work together hand in hand and side by side for the good of Woolton and of us all. For masters and men, to my mind, to disagree is as if some part of the machinery were cleaned and oiled and smooth, and the rest rusty and out of gear, so that the looms would not do their duty. I am no speech-maker, and have been taken by surprise, so, in Mrs. Preston's name and mine, I give you sincere thanks, townsmen, for your welcome, and let us hope that good times are in store for dear old Woolton."

There was hearty hand-shaking, however, before the Woolton cloth-workers would let Frank go, while hats were waved and valedictory expressions uttered in honor of his beautiful young wife, whose eyes glistened with tears as she looked, half timidly, half proudly, round at the market-place, filled by the surging crowd. Then the carriage drove off.

There is not much left to tell. Miss Ashe, with a handsome and acceptable addition to her stinted income, went back to Leeds, evermore to sing the praises of "my dear nephew, Frank Preston;" and, indeed, if a man could be spoiled by prosperity and by being well spoken of, Frank Preston is that man. But Frank, thanks to whose growing influence Woolton is often cited as a model town of the North, and an example to be followed, remains unspoiled. Major Mowbray was thankful, it need hardly be said, when his father's telegram furnished an agreeable premonitory contradiction to his father's letter, and when he found that he had not to hurry back from his hot quarters in India to concur in the sacrifice of half the inheritance of Langdale, to preserve the well-meaning squire from the consequences of his blind trust in Ralph Raeburn.

Mabel Mowbray, whom her mother once destined for Frank Preston, is now the wife of Harry Gaunt, nephew and heir of old Sir Simon, whom she first met at that notable dinner-party that was given in Frank Preston's honor. The beauty of the family, Maud, like some other flowers of the flock, remains unwooed and unwedded, no titled suitor having as yet put in a plea, but as she is a frequent visitor at her sister's London house, perhaps this omission may some day be rectified. The squire himself often dines, both as a host and as a guest, in company with Mr and Mrs Preston, and, although he loves and honors Frank above all men, seldom fails to engage him in a lengthy argument on the subject of, in Mr. Mowbray's eyes, Frank's mistaken principles of action, and his life-long error in not "letting ill alone." But Frank, who is very patient with his old friend, merely smiles, and remains unconverted to the creed of selfishness—the same Frank Preston that we have seen him in these pages to his dying day.

THE END.

FUNDS FOR COUNTY ALLIANCES.

(To the Editor of the Witness).

SIR,—Mr. Graham, the successful secretary of the Church of England Temperance Society, when in Montreal, informed us that he did not make a practice of organizing a branch society until those who desired it were prepared to pledge a certain sum for its support. I think the sum named was four hundred pounds sterling. In the work of organizing county alliances in connection with the Dominion Alliance we do not make such requirements but it will do very much to ensure the success of such organizations and the general stability of the Alliance movement if immediate and practical attention is given in every county to the important matter of "funds." Before making an appeal the committee of a county alliance should consider the work to be undertaken and the probable amount required. Amongst other things to be done there should be a system of distributing temperance literature. This may be accomplished through churches, Sunday schools, temperance organizations, &c., but the literature must first be purchased and funds are needed for that purpose; there should be a regular system of public meetings in every county during the approaching fall and winter; good speakers can easily be obtained from Montreal or elsewhere, but travelling expenses must be provided for. Some counties would be benefited by having, for a month or more, the services of a good lecturer and such can be had if the Committee are prepared to pay therefor. There is always a necessary amount of printing and several incidental expenses, and in some cases there are legal expenses inseparably connected with Alliance work. A good county fund is therefore indispensible and should be secured as soon as possible. The following plan is recommended: The County Alliance to decide how much is needed to carry on really aggressive work during the next twelve months, suppose $500 to be the amount decided upon, divide this amount between the towns, villages and townships and endeavor to find some persons responsible for an earnest effort to raise the amount required from each locality. Leading men should be asked to head the list, with liberal subscriptions, and as many individuals as possible asked to pledge themselves to raise $5, $10, $20 or more, either by personal subscription or by their own subscription and subscriptions from others until the amount pledged is made up. Ladies can render important service in this matter and can easily get a large number of subscriptions that would otherwise be overlooked, the names of all contributors of 25c. or more to be entered in a roll book and each contributor to receive a card of membership from the Quebec branch of the Dominion Alliance.

The Provincial Executive has left the question of raising and expending funds in the several counties (where county alliances are formed) entirely in the hands of the county alliance, in so doing they have given up their claim upon many who would otherwise have been asked to contribute to the funds of the provincial branch, but it is done with a firm conviction that more money can be raised, more work done and the Alliance movement placed upon a broader and surer foundation that it could otherwise be.

THOMAS GALES,
Secretary Dominion Alliance,

Dixville, August 10th, 1882.

MORE ROBBERY OF NATURE.—Considerable excitement has been created at Plattsburg, N.Y., by the sale of 50,000 acres in the heart of the Adirondack region to a company of lumber dealers. The tract covers the region of St. Regis Lake and the Upper Saranac, so well known and loved by anglers. The purchasers intend to build a track from the Ogdensburg and Lake Champlain Railway to the centre of the wilderness, and construct sawmills at many points along the line. The great tracts of splendid pine timber will be despoiled; the clear streams choked with slabs and sawdust; the breeding places of the trout polluted, and every quality destroyed which has given the North Woods their attractiveness and fame.

THERE ARE PROBABLY more Campbells in Canada than in Argyleshire. So at least one would infer from the fact that an address to the Princess Louise and her husband, congratulating them both on her return to the Dominion, which was presented lately in the Citadel at Quebec, bore the signature of more than three thousand male representatives of the clan.—*The Outlook, London.*

ALTHOUGH FRANCE is a republic, she still retains titles. Quite singularly, most of her princes are very young. The Duc de Guiche is a baby of three years; the Duc de Montebello is five; the Duc de Richelieu is seven; the Duc d'Uzes, the Premier Duke of France, and one of the two who could wear a hat before the king, if there were a king, is but fourteen, and that is the age of the Duc de Luynes; the Duc d'Elchingen is twelve; the Duc de Glucksburg is sixteen; the Duc de Lorge is twenty; the Duc d' Orleans, twenty-three; the Duc de Morny, twenty-four; the Duc de Maillé is twenty-seven, and so is the Duc de Persigny; the Duc de Liancourt is twenty-nine; the Duc de Grammont, the Duc de Lesparre, and the Duc de Blacas are each thirty.—*Harper's Bazar.*

[For the *Witness.*

MARION.

BY ELIZABETH DYSART

CHAPTER I.

The red firelight made grotesque figures on the wall, and leaping up, lighted the whole room for a moment. They settled again leaving it almost in darkness, but showing very clearly the figure of a young girl, bent almost over the glowing coals. It was a tastily furnished apartment, and Marion Grey was richly dressed, so poverty was not the cause of the trouble stamped so plainly upon her face. It was a face well worth a little study. If you were looking at her now this is what you would see.

A low, broad forehead, with heavy waves of brown hair brushed away from her temples, great black eyes with a shade of sadness in them, that they never lost, even in her happiest moments, and a mouth in whose every curve was combined sweetness and beauty. Yes, Marion Gray was very beautiful, but her face was a thought too pale, and her most intimate friends wondered why she was so grave—why she, who had so much to make her happy, should never seem care-free as other young girls did.

The clock on the mantel struck one. She walked to the window, and parting the heavy curtains looked out upon the still, frosty night.

"What can be keeping him so late?" she said to herself. Then she looked at her watch hoping the clock might be wrong; but no—the little hands persistently pointed to one. She came back to her old place, poked the fire into a brighter blaze, and buried her face in her hands for another patient waiting, when a light step on the porch sent something like gladness into those great, sad, dark eyes. A tall stern man, with a closely shaven face, that wore much the same troubled look Marion had, came into the room and flinging himself into a chair at the opposite side of the fire, said wearily almost angrily,

"Am I never to be free from the horrible scenes that cursed drink causes?"

"What is it now, father?" she said, very quietly.

"As I was cominghome I met Mrs. Coland's daughter running bareheaded in the street, and she begged me to come with her, as that cousin of hers—Freeman—was in a terrible way. I went and found him in the last stages of *delirium tremens* and for four hours I have been there listening to shrieks, and groans, and curses, until I feel as if I had been through a scene down in the pit itself. O it was fearful!" and the strong man shuddered at the remembrance.

"Did he die?" she whispered, moving nearer to her father.

"Yes, poor wretch! died with the most horrid oaths on his lips. I was glad when I knew he couldn't speak again."

"O father! how could you? Perhaps if he had lived he might have grown different."

"Too late for that," he said, standing up and looking down at her. "He had drank so long that the devil had possession of him, body and soul."

"Don't say that! I hope it is never too late for any one."

"Mamie, child, you and I know there are some people who couldn't stop if they would." He stooped and kissed her forehead, and without another word left the room. The patient look which always hovered about her mouth, gradually spread itself over her whole face, as she went slowly up to her own room.

Mr. Grey was a prominent merchant in the town of Lyrton. He lived in a large, comfortable, old stone house just at the end of the town, near enough to be convenient to his business, and far enough out to afford ample grounds, fresh air, and a beautiful view of the river. He brought his wife here a bride, and this was the birthplace of their two children, Tom and Marion. Tom was a college lad and gave promise of something very like genius. His father once said of him, "Tom will be a son to be proud of, if he only takes care of himself." But Tom was not taking the best of care of himself just now. He had been at home for a few days complaining of not feeling well.

Some persons envied Mr. Grey—most people thought him a very fortunate man; but, like other homes, this one had its skeleton in the closet. Closely hidden, it is true, so that even their most intimate friends did not dream of its existence—but there, nevertheless.

What it was, we may see by following Marion up to her mother's room one clear, bright, wintry afternoon. The sun shone cheerily in at the window, and Marion had half-crossed the room toward it, before she noticed that her mother lay on the sofa asleep. There was nothing so unusual in that, but something in the sleeper's face sent a sharp pain to her heart. Then she looked eagerly round the room, as if in search for something. Her eye went rapidly over the bureau and toilet in vain. What she looked for was not there; but she found it in a closet. It was a small flask, and she turned its contents into the fire in the grate, shuddering from head to foot as she watched the blue flame curling upward as it burned. The door opened softly and a servant entered.

"Betty," said Marion severely, "how did this happen!" and she pointed to the sofa.

"Indeed, Miss Marion, I cannot just tell how it did happen. I sat with her myself, till she sent me down for a glass of water, and when I came back she had that bottle."

"And you do not know where she got it?"

Betty's red face grew redder, but she said nothing, keeping her eyes on the carpet while she traced its figures with the toe of her boot. She was an old servant, and felt herself privileged.

"Betty, tell me," said Marion in a low, pained voice.

"Well, Miss Marion, it was in a flask such as gentlemen carry in their pockets," she said significantly.

"What of that? Where did she get it?"

"I think," said Betty slowly, "that she got it in Mr. Tom's room."

"Oh!" and Marion clasped her hands over her heart and sank into a seat. "Betty, do you suppose Tom drinks?"

"Yes, Miss Marion, he do. I'm sorry to say so to you, poor lamb; but I don't know what else to do. I found it out before he went to college, and he promised me he wouldn't touch it when he got there if I wouldn't tell you or his father. You know, Miss Marion, this is a bad place for the drink, and he thought it would be easier when he got away from the boys here; but he came home drunk last night, and one night before that, and I dare not keep it from you any longer—on account of her, you know. He gives it to her and I can't stop that."

Marion had only time to whisper, "Don't tell father," when heavy footsteps came up the stair, and Tom brushed past them as they stood in the hall, and went into his own room banging the door after him. But, one glance told to her practised eye the thing she dreaded, and Betty compassionately left her to herself. She spent an hour in her own room gathering up strength for this new trial, and then she tapped at Tom's door. There was no answer, and she softly opened the door, and went in. He had thrown himself on the bed, and lay in a stupor that could scarcely be called sleep. She knelt at his side, and laid her cheek against his hand.

"Get out of this, I say, Bob," he grumbled "Who wants you sneaking here? You'll be telling my father next."

"Tom, dear, it is I," she said, moving a little so that he could see her.

"O, it's you, is it? What do you want!" he added more gently.

"Oh, Tom!" It was all she could say. Now that she was there, words forsook her.

"Now Marion, what's the use of your bothering," he said, rising and leaning against the bed. "I know very well what you think, but I've only had a glass of beer with the fellows."

"Tom Grey, don't say that. You know, and I know too, that one glass of beer never made you like this."

He kicked a chair across the room before he replied. Then he said,

"Well, what if I have had more than one, whose business is it?"

"My business, Tom—and yours. It is your business to preserve your manhood and not degrade it; and it is my business to help you."

He shaded his face with his hand while she went on.

"I don't need to tell you the curse the vile stuff has been to us always. You know as well as I how it has ruined our mother, and how that trouble has made father old before his time. Tom, do stop before it has set its fearful mark on you, and stand side by side with me in bearing what it is now too late to cure."

He threw his arm about her as she knelt at his side.

"Mamie," he faltered. "I'd spill my heart's blood to please you."

"You will do this, then, Tom? You promise to leave off tasting, entirely?" she asked eagerly.

"I will not come home in this state again," he said, evasively.

"That won't do, Tom. As long as you taste you are not safe."

"Well, I'll let it alone then; but don't speak to father, Mamie. I'm sorry to have troubled you, and I don't want to add to his care."

A light came into her eyes that was nearer akin to gladness than was often seen there, and hearing a sound from her mother's room, she left him with a kiss on his brow to seal the compact she had made with him.

There is usually one in every family, on whom the family troubles seem to fall heaviest. In this family, that one was Marion. She had never been loved by her mother—Tom was her idol. Almost worshipped by her father, she felt keenly every trouble that touched him, and, to save him pain, she bore many of them alone. Tom Grey loved his sister as truly as he could love any body, but he was morally weak, and easily led astray. He felt strong under the inspiration of her presence when he made the promise, but once out among his old companions, and he fell an easy victim to the tempter; so, in less than a week he was drunk again. This time he had just sense enough left to know that he must not go home, and morning found him knocking for admittance at a small, bare-looking frame house at the opposite side of the town from his own home. He had no idea where he was—he only knew that this house was too small to be his father's, and so he staggered up to the door. A tall, square-shouldered woman, with keen black eyes, and firmness in every line of her face, opened the door and stood looking at him without saying a word.

"Can I have some breakfast?" he asked, making an attempt to lift his hat, and only succeeding in making a plunge toward the open door.

She stood aside as permission for him to enter, and by holding fast to the casement he managed to get up the one low step, and staggered in; but he had only gone a step or two when his feet proved traitors, and he fell his full length upon the floor. His hostess stepped to the back door and called out,

"John Smith, come in here."

Her husband thus addressed, meekly laid his axe beside the log he was converting into firewood, and walked in with the air of a man accustomed to obey orders.

"Carry that there drunken brute into the other room. Don't you put him in my clean bed, mind—the floor's good enough for such critters."

"Marthy, do you know who he is?" enquired John cautiously, when he had disposed of Tom as comfortably as he could on the bare floor of "the other room."

"No, I don't want to, nuther. When men goes and makes beasts of theirselves like that, they don't deserve to have anybody look at them long enough to know 'em."

"Marthy, it's poor Tom Grey."

"Well, what do I care?" she snapped back.

But she evidently did care, for as soon as John Smith had gone out, she went into the room where he lay, and planting her hands firmly on her sides, she stood and looked at him full a minute before she spoke.

"Tis Tom sure enough, poor critter. My goodness! he's dreadful like his mother. I remember her when she was about the prittiest girl I ever see. Curse that whiskey!" she went on, vehemently, "I wish I had every drop of it there is in the world. I'd make a sea of it, and then I'd take every drunkard, and tie 'em hand and foot and pack 'em into boats and set 'em a float on it, and see how they'd behave theirselves there. Reckon that would fetch 'em to their senses:" and with a grim smile she went about her household duties, mentally preparing a wholesome lecture for Mr. Thomas Grey when he should awaken.

While the family were taking dinner, a curious sound, something between a choke and a groan, came from the room where Tom still lay, sleeping off his night's potations.

"I'll just step in and see what's the matter with him—," said John, half rising from his seat.

"No you won't, John Smith. Guess I've took care of drunken men enough to know how to manage this un. You let him be."

John sat down again, and finished his dinner in silence.

John Smith did his wife's bidding in all things save one—he would persist in—as Martha expressed it—making a beast of hisself, every time he went where whiskey was to be had. Perhaps he was all the more unmanageable on this point from his ready obedience on all others. Perhaps—it is hard to tell. He had gone out to his work again, and Mrs. Smith sat by the stove with her baby in her lap when Tom Grey stumbled to his feet, and came out looking very much ashamed of himself—as he deserved to. She pushed a chair toward him with her foot, and he sat down running his fingers through his curly locks, and trying to collect his scattered senses.

Suddenly he turned to look at his hostess, and an exclamation of surprise escaped him.

"Martha Hubbard! Why, Martha, you lived with my mother when I was no larger than that little fellow on your lap."

"Guess I know it!" she replied drily, "yes, Tom Grey, I lived with your mother before she was married, and I'm sorry to see a son of hers lookin' like you be."

Tom was cross, and this stung him; so he retorted:

"If you knew my precious mother so well, you must know that she's no better than—"

The remainder of that sentence was lost, for Mrs. Smith rose to her full height, which was an inch or two above him, and, as he afterward said, looked down on him like a volcano.

"Tom Grey, be you a devil all through? A feller that can let hisself down to talk like that about his own mother is a party nice kind of a chap! I've a mind to pitch you into the street, and break your good-for-nothing neck!" and she looked so entirely capable of doing it, that Tom was made, for the time being, as meek as John Smith himself. He looked reflectively at his boots and said nothing. There was a dead silence of a few minutes, and then she began moving round the room, Tom's eyes following, as though he were not quite sure what she might do with him. She made him a cup of strong coffee, and brought him some dinner, and when he had obediently eaten it, she opened the door and said, severely,

"Now you leave, and if ever I hear of you being in another such a scrape as this, I'll walk over and speak to your father;" and she shut the door so close behind him that it gave him a little help down into the street.

Tom walked off, his hands in his pockets, and his brain in such a whirl that he hardly knew who he was.

"I dare not go home to Marion," he soliloquized; "she knows the symptoms too well. I'll go and see little Mollie Lancey—she won't suspect me."

Mollie Lancey was a little seamstress that Tom had picked up an acquaintance with. Her pretty, childish face flushed with pleasure when she saw him.

"Mr. Grey! How dreadful you look. Are you sick?"

"Yes, I came home from college because I was sick." He did not think it necessary to add that his illness was brought on by a system of wine-drinking, persisted in, in open defiance of college laws.

She pitied him so sincerely that Tom began to think himself a much abused individual instead of the sinner that had suffered such a reprimand from Mrs. John Smith. With that feeling came the thought that Mollie was his friend. "She never scolds and bothers as Marion does," he thought. And he wondered how she would look with a little more color in the cheeks that were growing pale from close confinement to her needle. So he proposed a drive into the country; and as drives were rare things to Miss Mollie, especially with such young gentlemen as Mr. Tom Grey, she was glad to go. He came back feeling so entirely himself that he ventured to go straight home.

Marion met him in the hall,

"Tom, where have you been?"

"Always that question, Mamie," he said gaily, putting his arm round her. Well, then, I've been out into the country."

"I was so afraid you were drinking again, when you did not come home last night."

"Little doubter! Did I not promise you?" It was almost—or quite—a lie. So closely does one sin follow in the steps of another.

The next week Tom went back to college and Marion comforted her heart, in his absence, with the thought of the promise he had given her—a promise lightly esteemed, and not very faithfully kept by that young man.

CHAPTER II.

Spring, with its warm, bright days brought something of gladness, or at least of relief, to Marion Grey and her father.

For weeks Mrs. Grey abstained entirely from touching the poison. She took daily drives, and began to take her place—long filled by Marion—as mistress of her house. She explained to her friends that her health, which had prevented her going into society for the last few years, was greatly improved, and she hoped to be able to see them often now; and they believed in the reasons she gave, and so began to gather about her as in the old times when she had been one of society's idols. It galled Marion to be a party, although a silent one, to the deception: but her father was very sensitive on the point of the family honor, and so she sat silent and heard her mother talk of the terrible headaches from which she had suffered, and how her nervous system had been so deranged that sometimes it was impossible for her to see anyone but Betty, her faithful old attendant. Which indeed was partly true; but she seemed trying to hide, even from herself, the cause of all the trouble.

At last, she noticed how pale Marion was, and said to Mr. Grey that she ought to have something to cheer her up and make her gay as a young girl ought to be.

"I am sure," she said to him, "I was not so mopish when I was her age. You must remember, George, that I was merry as a bird. I can't understand why Marion should be so—she has everything to make her happy."

It was hard for Mr. Grey to refrain from telling the reason for Marion's unusual gravity, but she never allowed the slightest allusion to her own sad habit, and remembering that, he checked the words in time.

"What can we do for her?" he said.

"Send her away for awhile. I don't believe she has been out of this town for a week, since she was a child."

For the first time, the thought occurred to him that he ought not to have allowed Marion to confine herself so closely to that home from which the cloud of trouble never lifted. That he might, if he had only tried, have thrown a good deal of brightness into even her dark life. Even now he was very unwilling to spare her; but, after thinking about it, he decided to send her for a few weeks to his sister in the country.

That summer was an oasis in the desert of Marion Grey's life. Days lengthened into weeks, and weeks into months, and October came before her aunt would consent to part with her. She came home with a suspicion of color in her cheeks, and a glad, rested look in her eyes that fully repaid her father for his loneliness during her absence.

Not long afterward, Mr. Grey had a call from a young clergyman who gave his name as Carl Allyn, and who told him in an honest manly way that he loved his daughter, and asked his permission to win her for his wife. He explained to Mr. Grey that during his college vacation he had supplied a vacant pulpit in the neighborhood in which Marion had spent the summer; and he added.

"You cannot wonder, sir, that thrown constantly in her society, I learned to love one so pure and womanly as she."

The father knit his brows, and a frown gathered over his face as he listened.

"Have you spoken to Marion?" he asked.

"Certainly not: I could not without first speaking to you."

Mr. Grey's brow cleared at once. He had not expected to find this young man quite so honorable.

"I am very glad you have not," he said. "Marion is young, and I had rather no such thoughts were put into her mind just now. Pray do not speak to her yet, at all events."

"Do you forbid me to see her. Mr. Grey?"

"O no," he said carelessly. "I think I can trust you not to betray your feelings or attempt to rouse a similar feeling in her."

"I cannot be sure of myself," said Mr. Allyn. "It has been very hard sometimes not to speak, and I dare not trust myself too far."

"Very well; perhaps you had better not see her then." And so, with a heavy heart, Carl Allyn went back to his work.

For a long time Mr. Grey walked slowly up and down the library where Mr. Allyn had left him.

"I wonder if I did quite right," he thought. "I could not tell him of the curse that is upon us, and, of course, I could not allow him to commit himself to her daughter without knowing it. I hope Marion does not care for him; but if she does, she must bear it. Heaven knows her life cannot be harder than mine has been!"

There were times when thoughts of the young clergyman would creep into Marion's heart, and she wondered if she could have been mistaken in thinking he cared more for her than an ordinary acquaintance. He had told her when they parted, that she would probably see him soon; but he did not come. She knew nothing of his interview with her father, and so there was a sore spot made in her heart—one more burden laid upon her young heart by that terrible drink, which the laws of our land pronounce a fit and proper article to be manufactured and sold.

About a week after Marion's return, there came a rainy day—not a steady, soft rain such as gives one a comfortable feeling in being safely housed while the thirsty earth is having a drink, but a wild, fierce storm. The wind moaned and shrieked in the tall old poplars, and rattled the shutters, and sent the rain driving against the windows as if it would force an entrance at all risks. Mrs Grey complained of a headache in the morning, and toward night it grew so much worse as to alarm Marion. Every gust of wind sent a shiver over her frame, and she looked anxiously for her father's return. It would not have had a tendency to allay her fears, if she had known of the fight that was going on, with a human soul for battle ground, and of how, as night came on and the battle was ended, the devils laughed in glee, and the good angel turned sorrowfully away.

"Marion, can you not give me something to soothe this maddening pain? I feel as if I should go wild."

"I would relieve it very gladly, mother, if I only knew how; but I don't know what to give you."

"You do know what to give me," she said vehemently, sitting up on the sofa and holding both hands to her head. "You know very well what to give me, and I dare say there is plenty of it in the cellar this minute. Marion, do get it for me," she added, changing her tone, "there's a darling! Half a glass of brandy would quiet my nerves, and put me asleep, and I shall go mad if I don't get it."

"Mother, dear," said Marion, gently, "don't think about it. It is so long since—since—" she hardly knew how to finish the sentence.

"Yes, I know," said her mother, impatiently; and that is all the more reason why I should have it now. You have seen for yourself that I can do without it, so there is no danger in giving me a glass now."

"I cannot do it."

Marion's tone was low, but very firm.

"You are an ungrateful child! To think of the care I have taken of you when you were sick, and you will not give me such a little thing as this, when you know how soon it would relieve me. If Tom was here, he would do it—Tom loves his mother."

A spasm of pain crossed Marion's face, but she sat still, saying nothing.

"Tell me one thing, Marion. Is there any brandy in the house?"

"I do not think there is a drop of anything of the sort about the place," was Marion's reply.

"Go away—I don't want you here. Send Betty to me."

It was no new thing for Marion to be discarded for Betty, and she knew she could trust the faithful old servant: so she went down to the library and Betty took her place. Darkness came on early that night, and Betty was preparing to light the gas, when Mrs. Grey stopped her.

"Don't, Betty—the light hurts my eyes. If you will go down and leave me, I think I could sleep." She seemed so very quiet that Betty thought she would sleep, so she left her.

As soon as she was left alone, she wrapped a shawl about her, and stole softly down stairs, and out through a side door into the night and the storm. The wind blew against her, almost taking her off her feet, but still she struggled on. The few who were on the street looked curiously at her, but her face was so concealed by her shawl that none recognized her. Under a street lamp she met John Smith carrying a suspicious looking black bottle. He worked for them sometimes, so she knew him quite well. She looked up and down the street, and seeing no one she touched his elbow.

"John, what have you in that bottle?"

"Lord have mercy!" he gasped as he recognized her.

"Never mind praying now—what's this?" and she touched the bottle.

"It's only a drop I meant to take when I got 'most home, ma'am. You see, it's a nasty night, and I was afraid I might take cold."

She snatched the bottle, forced a piece of money into his hand, and ran with all her might toward home. Mr. Grey came up just in time to see the whole transaction, without being seen himself. He collared John, who stood staring in blank amazement after Mrs. Grey.

"John, can I depend on you not to speak of this to any living soul?"

John scratched his head and reflected.

"I don't know why I should, or why I shouldn't," he said, cautiously.

"I can give you a good reason why you should not. I have been your friend when you were badly off for work, and I will be your friend as long as we both live, if you keep your own counsel; but if you do not"—a very expressive silence finished the sentence.

John remembered that his friends were not very many, and concluded that it would not pay him to lose this one, so he gave the required promise, and Mr. Grey knew that, drunk or sober, John Smith would not break his word.

That was a sad night in the home of the Greys. Marion was sent to her room, only to spend the night in silent grief for the overthrow of the hopes she had been building up, while Mr. Grey and Betty watched over the broken slumbers of her who should have been the sunshine, and was but the curse of the household. As Mr. Grey paced the room that night, pausing now and then to look at the woman he had loved and been proud of, but who was fallen so low, bitter thoughts arose in his mind. Bitter, not only against this frail woman for whom he still had a lingering tenderness, but against the usages of society that had helped to make her what she was. Inheriting a taste for intoxicating drinks from her father, who was a guzzling old squire, she had been taught from childhood, both by precept and example from those she most respected, that wine was a good thing. So she had gone on taking it, ignorantly at first, wilfully afterward, until now—well, I think it had become a physical disease, from which there was little hope of her ever being free.

And this is not a solitary instance of what this giant evil, countenanced by society, can do. Alas! we have them all about us. The young mother is advised by her physician to use porter or wine, when she does not feel strong. She demurs, perhaps, until some lady friend is consulted and she says,

"Take it of course; I always do."

So she takes it, and although she is not visibly stronger under its influence, still she continues it. It may be that the appetite for it does not grow upon her, and so she sees no danger; but as the years go on she is astonished to discover a fondness for it in her sons, forgetting that they were fed upon it in infancy.

That night was but the forerunner of many another such. Sometimes when she had been entirely sober for weeks, they would begin to build up hopes; when suddenly, no one could tell how, she would get it again; and then there would be another night of watching. So the time wore on until Christmas was coming.

It was Christmas eve, and Marion Grey sat in her own room thinking such happy thoughts as pure young girls do sometimes think. Her bible lay open in her lap—she had been reading of that wonderful scene on Judea's plains, where "Peace on earth and good will to men" was proclaimed. Now her thoughts went back to one cool, dewy morning in June, when, in the little country church, she had heard Mr. Allyn talk of Jesus and His love, till her heart was filled with a great longing to know more of this old, old story. And since that time, little by little, the light of the blessed gospel of peace had been coming into her heart through rifts in the clouds that surrounded her, until now she was conscious that it filled her heart. She had even forgotten her sore every-day trouble, when Betty tapped at the door and handed in a letter, saying,

"I think it is from Mr. Tom."

It was from Mr. Tom, and its contents banished the sunshine, and hushed the glad voices in her heart. This was what it said:—

"I'm in a great scrape now, and it will take two or three hundred dollars to get me out of it. I haven't the money and you must get it for me. Tell father any story you please but get me the money. I'll own I had been drinking a little. One of the fellows gave a supper, and I had to go, and they almost forced me to drink, and—well, I'd have been expelled but for a Mr. Allyn—a parson, but a regular trump for all that. At all events, I am coming home as soon as this bothering thing is settled, and I shall be all right when I am with you."

How her heart ached as she read the carelessly written lines. She had hoped that Tom had given up his bad habit, and that her father need never know; now she must tell him that the son of whom he was proud was tainted with what had already been such a curse to them. The merry chiming of the Christmas bells brought no gladness to the two hearts mourning over a fallen idol—for Tom had been almost an idol to every member of the household. At Marion's request, her father sent the money Tom wanted, and then that young gentleman came home.

Three months went by. Tom had not been altogether what Marion could have wished, during that time. Two or three times he had been drunk—positively drunk; but he seemed so penitent afterward, and promised so fairly to struggle against his weakness, that she kept her faith in him, and threw about him the mantle of her pure, sisterly love. Ah, the affection that strong, loving, generous women will waste upon worthless men! She knew nothing of the times and times when he went and drank, "just a glass to keep his spirits up," he said; nor of how he laughed with his low comrades about what a lecture he should get if she knew. And still, every drop of blood in his veins would have been fired with indignation at the imputation, if he had been called dishonorable. He prided himself on his honor. Poor human nature!

(To be Continued.)

A STATUE OF MR. GLADSTONE.

AN IMMENSE GATHERING IN THE EAST OF LONDON—LORD CARLINGFORD'S SPEECH ON THE UNVEILING.

It is not often that men's statues are erected during their life time, but an exception to the rule has just taken place. On the 9th of the present month there assembled at Bow, in the east end of London, at least 30,000 people and probably many more, to do honor to the great statesman who has led the Empire through more than two of the stormiest and most painful years ever weathered by a British Government. The occasion was the unveiling of a splendid bronze statue of Mr. Gladstone, presented to the East of London by Mr. T. H. Bryant, of the well known firm of Bryant & May, match manufacturers. Mrs. Gladstone, with Mr. W. H. Gladstone, M.P., Mr. Herbert Gladstone, M.P., and Miss Gladstone, was present at the ceremony, which was performed by Lord Carlingford. The wide street was for nearly half a mile filled with enthusiastic spectators, and it was some minutes before his lordship found a lull in the cheering to get in a word.

After alluding to Mr. Gladstone's great financial achievements, and the reforms by his first administration, he said:—We are now in the midst of Mr. Gladstone's second administration, and it has been one of even greater labor, anxiety, and difficulty and peril than the first. But I am not able to describe it in the same terms for this reason, that it is almost summed up in one word, in one name inseparably connected with the name of Gladstone—I mean the name of Ireland. Gentlemen, it so happens that I have been a member of both Mr. Gladstone's Cabinets, most closely connected by birth and otherwise with the sister country, and I cannot pass that name by without dwelling upon it for a moment. The time, gentlemen, has not yet come, and Ireland—popular Ireland—is not yet in the temper to recognize fully the debt she owes to Mr. Gladstone, although there are thousands of Irishmen who feel it already. But that time will undoubtedly come. Among the sacrifices Mr. Gladstone has made for Ireland this I hold to be one, and a great one, that he has incurred in her cause a great part of the strange aversion and fear which his name inspires at this moment in certain quarters and classes in England. I do not know whether to think that fear more ludicrous or more sad. It is at all events a tribute to the power of the man who inspires it. I can only call it a political disease—an epidemic of our day—and its worst symptom is that it blinds men's eyes to truth and reason. Under its influence men lose their common sense as well as their good nature, and create a Gladstone of their imaginations as unlike the original as your statue here is like him. (Cheers.) Other great men in other ages have become fabulous beings after their death. It is Mr. Gladstone's fate to be a fabulous personage during his life, and all this arises, in large measure at all events, because Mr. Gladstone as the Liberal leader has adopted and persuaded the Parliament and people of Great Britain to adopt a policy which, wise and necessary as it is, looks violent and of evil omen to those who don't or won't understand its necessity. Gentlemen, there is a saying is one of the earlier speeches of Lord Beaconsfield, then Mr. Disraeli, which sums up the Irish problem with a brilliant insight. In a speech which he made before reaching office, after describing the bad laws and institution, which an unhappy destiny had imposed upon that country, after pointing out that nothing but the English connection, the power of England, maintained those laws and institutions unchanged, he asked this question, "What then is the duty of an English minister? To effect by his policy those changes which a revolution would effect by force. That is the Irish question." It was not reserved for Mr. Disraeli to turn those words into deeds. He saw the duty afar off. It was left for Mr. Gladstone to fulfil it. This duty, one of the highest that could be undertaken by an English statesman in our day, has fallen to the Liberal party to perform, and, above all men, it has fallen upon Mr. Gladstone. He did not make the circumstances which have made the Irish legislation necessary. The circumstances made him, or rather they found him. The hour had come, beginning in 1869, for this great work to be done; and there is the image of the man who was ready to do it, who was able to do it, and who was capable of convincing the people of Great Britain that it ought to be done. (Cheers.) And then, gentlemen, we are told that this policy has failed. A more hasty, a shallower assertion was never made in the history of politics or of party. As well might the physician be condemned who does not cure in a day long, inveterate and dangerous disease, which is the case of Ireland itself. (Hear, hear.) We, like the physician, have a right to demand time and patience, and with time and patience we trust that we shall see, nay we believe that we see already, the signs of deliverance and health.

Lord Granville also spoke, and mentioned Mr. Gladstone's "merit as a colleague and his charm as a political chief."

Lord Granville, earlier in the day, had received an address from the South Sussex Liberal Association, and in the course of his reply said:—"Her Majesty's Government have at this moment to deal with two most difficult problems—the Irish question and the Egyptian question. We look upon neither with despondency—(cheers)—but we do feel that a great burden and responsibility rests upon us, and that it requires the concentration of all our energies to carry out the policies which we have adopted. Now, ladies and gentlemen, it is all very well for members of the Opposition, who have more leisure, to run about the country making speeches which, as far as I have remarked—and I do not know whether your views are different from mine—are generally of the same type. They are generally violent aspersions upon the name of the great man whose name you have just received so well, and very severe criticisms upon the Irish policy and upon the Egyptian policy of her Majesty's Government. Then there comes, just like that halfpenny worth of bread with that intolerable amount of sack, either in the beginning, the middle, or the end of the speech, a little sentence stating how important it is and how high a duty it is that the Conservative party should support her Majesty's Government. (Laughter). This is quite legitimate. I do not complain, although perhaps it may not be quite logical. It is for them to go according to their discretion, and to judge whether they do themselves more harm or good as a party.

KILLED BY A POISONED DAGGER.

The French papers record a remarkable accident by which the Comte de Belmont has had the misfortune to lose his youngest son. The Count before his marriage had been a traveller and from the Polynesian islands and elsewhere he had gathered a remarkable collection of lethal weapons showing the ingenuity and in some cases at least the artistic skill and power lavished on *kris* and *zagaie*, on sword and dagger. In a collection of this nature intended to show the warlike methods of savage races, arrows and other weapons whose shining blades had been dipped in poison were of course conspicuous. His two sons—Albert, aged eight and Rudolphe, aged twelve—having been left alone for a short time in his cabinet, with the inquisitive rashness of childhood took down two of the weapons to play with. Chance placed in the hands of the youngest child one of the poisoned weapons and a slight scratch on the wrist was sufficient to inject the fatal virus. When the unhappy father returned he saw the child writhing in agony upon the ground, a prey to frightful convulsions, from which death alone released him. The medical man who was called in was unable to save him, and could not even recognize the poison on the dagger blade. That most commonly used for such purposes is derived from the *Strychnos toxifero*. The *woorali* is said in some cases to have retained its poisonous activity after being kept dry for five years.—*Manchester Guardian.*

HOW THE WAR NEWS WAS RECEIVED IN INDIA.

A correspondent of a Bombay newspaper tells how the news that the Suez Canal was in danger was received by various members of Anglo-Indian society whom he chanced to meet. He writes:—"I was accosted by a lady with, 'Don't tell me that they've taken the canal. I've got a box coming from England with all the newest fashions, and I'm certain they've stopped the P. and O. and opened my box, and that some horrid Egyptian ladies are at this moment walking up and down the banks of the canal in my new bonnets and dresses.' A moment afterward a young gentleman came up in high spirits at the news. 'So there's to be an expedition to Egypt,' he said, 'and we shall all have to send our wives home round the Cape.' Much in the same spirit a moneyless Major wanted to know if it was true that the canal was seized, 'because in that case,' he added, 'of course they can't expect a fellow to remit money home.' And, last of all, a bronzed and genial Colonel read a telegram from England, and seemed much pleased with its contents. 'It's from Mrs. Bender,' he said, 'and it's to say that, owing to the reports about the canal, she won't leave England just yet. In fact, she will stay at home until things are quite settled. More power to the Egyptians!'"

DR. FREEMAN ON AMERICA.

It struck me that, with regard to reading and knowledge—at least in those branches of which I can judge—America stands to England very much as England stands to Germany. I conceive that in Germany the proportion of those who know something is smaller than it is in England, while the proportion of those who know a great deal is certainly larger. Anyhow this distinction is perfectly true between England and America. There is a mysterious being called the "general reader," of whom some editors seem to live in deadly fear. Now, I had long suspected that the "general reader" was not so great a fool as the editors seem to think, and my American experience has confirmed that suspicion. America strikes me as the land of the "general reader;" and, if so, I am not at all disposed to think scorn of the "general reader." It seemed to me that in America the reading class, the class of those who read widely, who read as far as they go intelligently, but who do not read deeply—the class of those who, without being professed scholars, read enough and know enough to be quite worth talking to—form a larger proportion of mankind in America than they do in England. On the other hand, the class of those who read really deeply, the class of professed scholars, is certainly much smaller in proportion in America than it is in England. The class exists; it numbers some who have done thoroughly good work, and others from whom thoroughly good work may be looked for; but it sometimes fails to show itself where one might most have expected to find it. Men from whose position one might have expected something more, seem hardly to have grasped the conception of original authorities. One sees college library after college library which does not contain a volume of the "Chronicles and Memorials," where the existence of that great series seems to be unknown.—*Fortnightly Review.*

DEFENCE OF THE MODEST WOLF.

The French Chambers having voted a sum of $20,000 for the extirpation of wolves, M. Charles Monselet, in *L'Evenement*, has undertaken the defence of that modest and much maligned animal as follows:

"The wolf is a calumniated animal. He is pensive, haughty, prudent and retiring. He keeps his own company, aloof from man, because he knows that he is a victim of prejudice and that his manners are not attractive. He is not a flatterer, like the dog, nor is he a stupid slave like the ass. With great good sense he understands that he is not fitted to shine in society, to amuse an audience like a monkey or to impress it like the elephant. He is misanthropic, but who shall blame him? He is reproached with a partiality for spring lamb. In the first place, he likes it. Vainly shall a whole faculty of philosophers counsel him to adopt a vegetable diet; for all reply he will point to the teeth given him by wise Nature. We, too, like spring lamb, and we have the innocent young of the sheep butchered by licensed slaughterers and exposed for sale at a mercenary price. The wolf, unable to buy, has to kill for himself, and this he does in person, after a hundred hesitations, and when impelled by the pangs of famine. 'Hunger,' says the proverb, 'brings the wolf out of wood,' and this saying, extorted from the reluctant conscience of man, conveys the highest praise of the wolf, implying a mental struggle, a previous repugnance. Being unable to deal with the butcher and opposed to the exactions of middle-men, the wolf has to address himself in person to the lamb. He transacts his business with celerity, his good breeding making him averse to causing public scandal. As for the lamb, destined to be eaten anyhow, it can make very little difference to him how he is exterminated; indeed, it is altogether probable that if the lamb's tastes could be ascertained it would be found that he prefers the healthful excitement of death by the wolf's jaws to the tedious and debasing formalities of the slaughter-house."

AMERICANS IN CHINA AND CHINESE IN AMERICA—A CONTRAST.

(*By Mrs. S. L. Baldwin in Independent.*)

In view of my experience as to the treatment of the Chinese in America, which I gave the readers of the *Independent* last week, I wish to leave with them a contrast, one that I have meditated upon long and grieved over much. In 1864, on a night that I shall ever remember, for its weary hours of anxious waiting, a Chinese mob went roaring through the great city of Fuhchau (of 600,000 inhabitants.) Spurred on by evil stories against us, they had determined to make short work of us. They first went to our newly-dedicated church, on East street, and destroyed it, leaving only the bare walls standing. Then they made their way to the home of the Rev. C. R. Martin, of our mission, who lived on one of the highest hills of the city. Next door to his house, with only the wall between, was a great Tauist temple, with its hundreds of idols and many serving priests. Poor, stupid heathen who had scarcely heard of the name of Christ or, hearing, did not believe. Brother Martin had been warned by one of our native Christians that the mob intended to come to their house. Without saying anything to his wife to alarm her, but to be ready for any emergency, early in the evening he went and, with the consent of the priests, made a hole in the wall between his house and the temple large enough for them to pass through into the temple. The two little children were put to bed and quietly slept, all unconscious of danger; but father and mother sat up and watched, attending to their family worship as usual. Not until they heard the mob almost at their very gates did Mr. Martin say: "Now, Mary, we must go!" And, as they passed into the temple assisted by the friendly priests, the mob broke in the gate and entered the room we had occupied a few hours before, as we had been spending the Sabbath with these friends. All during that anxious night Mr. Martin had, at intervals, as he was able, sent messengers over the wall to us outside of the city as to the progress of the riot. We could not get to them; they could not come to us. At last, at four o'clock in the morning, there came to us a scrap of paper torn from an envelope, upon which were these words: "The mob is now in our house; but, thank God, we are safe in the temple and the priests are very kind!" The morning dawned, and soon help was sent our friends, and ere long the money was paid for destroyed property and our church rebuilt

Now for the contrast. Last Winter, in the city of Denver, a Christian city, a mob of evil men attacked the Chinese of that city. They were as helpless as they had been inoffensive, and before the officers of justice arrived to enforce law the death blow had been given to one of these strangers in our land. At that time of his extreme need, away from his native land, the parents they so much venerate, and all that was dear to him, as the shadow of death settled down upon him, did any Christian door open to him? Did any priest of our God and our blessed Saviour open the temple of his God to this dying man? Did any such priest of any sect come near to tell him of the blessed Christ, our only hope? The record does not so read, but it does say that this dying, foully-murdered man in this Christian land "was carried to the city gaol to die!" I cannot, will not, linger over this. It is only one of many instances. From it I draw no conclusions against Christianity in favor of heathenism; but I do say: Give me an honest heathenism before a shamming, heartless Christianity. May the great God who made and cares for the 400,000,000 of souls in China not deal out to our pitiful 50,000,000 all the judgments we deserve for failing so terribly in duty and in recognizing the exceeding great blessings we have received from His hand and our corresponding duty to others less favored.

I yield to no one in love and loyalty to my country—the mere sight of the dear old flag has filled my heart and eyes on many an ocean and foreign shore; I am proud and grateful for our missionary and other great benevolent institutions, which stretch out in love after the world, but just in proportion as I love this native land of mine do I grieve over her immense failure to measure up to her great opportunities.

INSTANTANEOUS PHOTOGRAPHY.

HOW IT IS DONE.

The method by which Maybridge took his instantaneous photographs of horses while racing is thus described: At one side of the track is a long building containing a battery of twenty-four cameras, all alike, and standing one foot apart. On the other side of the track is a screen of white muslin and a foot-board. The screen is marked with vertical and horizontal lines, and the foot board bears numbers indicating separate intervals of one foot each. The instantaneous shutters of the cameras are operated by electricity, and their movement is governed by such powerful springs that the exposure is estimated to be about one five-thousandth of a second. The contact by which the shutters are sprung is made by the breaking of a thread drawn across the track at about the height of the horse's breast, there being one thread for each camera. In his flight through the air, therefore, he brings each of the twenty-four cameras to bear upon him at the moment when he passes in front of it, and that camera represents his position at that instant.—*Boston Journal.*

THE WATER-SOFTENING PROCESS.

From the London Times.

The important question of the softening and purifying of hard water in bulk, has received a satisfactory solution in the Atkins process, which promises to be of great public service in these respects. This process is a modification of, and an improvement upon, the old Clark system of softening water, which consisted in adding lime to the water to be softened, and allowing the mixture to stand for 24 hours in large reservoirs or precipitating tanks before it could be used. In the Atkins process, however, the precipitating tanks are dispensed with and the water can be used as it is softened, the process being continuous and no time being required for it to stand and settle. The process essentially consists in chemically purifying the water instead of mechanically as in ordinary filtration. In practice a small jet of lime water is introduced into a portion of the water to be softened, and the two are blended in a mixer, whence they flow into a softening tank into which the bulk of the water is conducted. From this tank the water with the lime in suspension flows into Atkins rotary disk filters, in which the solid particles are all arrested by an ingenious system of cloth covered disks placed within a tank, and which present a very large area for filtration within a very small compass. The purified and softened water is conducted from the filters to storage reservoirs ready for use. The effect of the lime water is not only to purify and soften the water in bulk, but to cause any clayey matters that may be held in suspension to coagulate, thus facilitating their removal. The water passes from the outside to the inside of the filters through the cloth-covered disks, the surface of which become in time coated with a deposit consisting of carbonate of lime and impurities. These surfaces are quickly cleaned by means of a series of brushes which are brought into contact with the disks. The brushes, which are fixed on a spindle, are rapidly revolved as are also the disks, but in opposite directions, the result being that in a few minutes the filters are cleansed and ready for work again. The system has been successfully applied to private water supplies in several instances, notably at the residence of the Duke of Richmond at Goodwood, and at that of Mr. W. H. Smith, member of Parliament, near Henley. The first application of the system to a public water supply is that of the Henley-on Thames water works, which were recently opened. It was introduced there by the engineer to the water company, Mr Jabez Church, in consequence of the extreme hardness of the water, which is obtained from the chalk, and is normally of about 19° of hardness. After treatment, however, by the Atkins process the hardness is reduced to nearly 4°, which means a beautifully soft water. The apparatus is calculated to soften and purify rather more than 100,000 gallons of water per working day of 10 hours. The softening apparatus was supplied by the Atkins Water Softening and Purifying Company, of No. 62 Fleet street, London. The system has been tested on the London and Brighton Railway by Mr. Stroudley, the Locomotive Superintendent, who is having an apparatus put up to soften and purify between 300,000 and 400,000 gallons of water per day for the supply to the boilers at the company's locomotive and carriage works at Brighton. The practical value of the system is, therefore, established as regards the treatment of waters containing carbonate of lime.

HAD SKOBELEFF LIVED.

What is certain about Skobeleff is that he so typified the Russian character, so fulfilled the Russian ideal, so inspired the common Russian that the masses of the soldiery not only loved him, but held him the nobler man for sacrificing them in heaps. They distinctly reverenced him more after the awful slaughter at the Gravitza redoubt, when he lost 8,000 men, and failed after all, than they had done before. That is the Russian temper shown through all history toward all their military favorites—toward Suwaroff, for instance, whose hold over his soldiery was riveted, not weakened, by the awful slaughter of the storm of Ismail, as well as toward Skobeleff; and that temper places in the hands of its object very terrible resources.

He wields the authority not only of a general, but of a religious leader like Mohammed; and, when he draws his recruits from a people like the Russians, can waste men with an indifference which paralyzes strategy. Such a man, so followed, can conquer in despite of science; and we do not wonder that the dread of Skobeleff, among a people like the Germans, who are naturally kindly, but who understand war, suppressed the instinctive reverence for death, and that they received tidings of his fate with something of displeasing exultation. They remembered what Zorndorf was, the battle in which the Russians were beaten from the first, but died in such masses that Frederick's army nearly perished in the huge killing; and they knew that with Skobeleff in command, if war broke out, Zorndorfs on a gigantic scale were more than possible. The Russian people would have formed column behind Skobeleff, till in defeating him, even if science had conquered in the end, Germany might have suffered as in the Thirty Years' War.—*The Spectator.*

BREWERS IN PARLIAMENT.

At the great temperance demonstration, held in Exeter Hall, London, on the 17th of July last, Canon Wilberforce made the following remarks:—

There is not a man in this room who can afford to look down on the *Times* newspaper. You may not like its mode of dealing with subjects, but the *Times* newspaper, as one of the wisest men I ever knew told me, has done very much in this matter to raise the standard of journalistic literature. And on the 16th of May the *Times* had a leading article on the liquor traffic, wherein it simply unveiled the whole face of men against whom we have to fight. The *Times* said: "You temperance reformers, you are wasting your shot and shell by bombarding these little outposts. You have to carry the whole force of your bombardment against the real fountain head of the evil—the great breweries of this kingdom." Therefore we have striven to raise the working men of England to the consciousness of what, with the deepest respect, I would call the intolerable folly of continuing to send back to the House of Commons brewers to represent their interests. (Applause.) I care not what their politics may be. I know many of them to be liberal hearted good men in their own private lives. I know some of them, and admire them, and like them personally, but I hate their trade, for I believe it is a trade which is at the bottom of the demoralization of this nation; that it is a trade which is at this moment helping to sensualize the upper classes, to vulgarize the middle classes and to brutalize the lower classes. (Hear, hear, and cheers.) When you wear the ribbon of blue you witness what I say before everyone, and I believe that that symbol will have a tremendous weight if we have the misfortune of another election, and a misfortune it might be for some.

A POWERFUL TEMPERANCE LECTURE.

It appears that during the progress of the freight-handlers' strike, Cornelius Dwyer of No. 107 Washington street, one of the strikers, indulged in a prolonged spree. His wife also helped him in imbibing liquor. On Tuesday the family, consisting of husband, wife and four children, were dispossessed. This brought the woman to her senses, and she at once went to the Tombs to procure a warrant for the arrest of her drunken husband. She told a pitiful story, and some charitable persons who were moved by it gave her a little money, which she invested in the purchase of whiskey. Father, mother and children were taken to the Tombs yesterday, and the parents were sent to the Island for six months each. The children were turned over to the care of the Institution of Mercy.—*N. Y. Star, Aug. 18.*

A SNAKE IN THE KITCHEN.

One day last week Mr. John D. Baldwin's servant called frantically to Mrs. Baldwin, saying, "There is a snake in the kitchen." As she had previously been frightened at a small snake, Mrs. Baldwin thought it was only one of a similar kind, and, taking a cane, went down into the kitchen and found a black snake coiled up in a chair making faces at the cat, which sat on the floor near him and apparently fascinated and completely in his power, her head oscillating correspondingly to that of the snake. The appearance of Mrs. Baldwin on the scene broke the spell, and the snake left the chair and attempted to climb the window casing, but a few well-directed blows by the plucky woman laid him *hors de combat*, while the cat went outside the door and stretched herself out and lay apparently lifeless for some time. The snake measured four feet in length.—*Torrington (Conn.) Register.*

Princess Eugenie, sister of the King of Sweden, recently sold her diamonds to raise funds in order to complete a hospital in which she is interested. When visiting this hospital, after its completion, a suffering inmate wept tears of gratitude as she stood by his side, and the Princess exclaimed, "Ah! now I see my diamonds again."

"RUSTICUS" IN IRELAND.

(From Our Special Commissioner.)

TWO IMPORTANT INSTITUTIONS.

CORK, July 18th, 1882.

In conversation with a gentleman who has considerable knowledge of Cork and vicinity, I asked him what the city was most noted for. He replied, "Butter and beggars. We have the largest butter market in the kingdom and our butter ranks the highest. We have also a larger number of poor people in our workhouse than there is in any other that I know of." As the Munster

AGRICULTURAL AND DAIRY SCHOOL

is situated within three miles of Cork and is the only school of the kind in Ireland I went to see it this forenoon. The farm on which the school is situated consists of 120 acres of rolling land beautifully located on the south bank of the river Lee, about three miles out from the city, and the scenery along the road is most charming, as the little river has several rapids in its course and the road crosses it twice, while nearly all the way there are groves of timber and gentlemen's residences. The county lunatic Asylum is on the north bank of the river, nearly opposite the Agricultural College, and is one of the handsomest buildings I have yet seen in this country. I found the superintendent of the school, Mr. Andrew Smith, in the hay field giving directions to a number of laborers, male and female, who were opening haycocks in order to give the hay a chance to dry in the bright sunlight and stiff breeze which was blowing, making it the first and only good hay day in this part of the country the present season. What seemed strange to me was the fact that owing to the abundant moisture, the aftergrass had grown up around the hay-cocks to a height of from eight to ten inches, and seemed as if it would not be many weeks until it would be ready for a second mowing. Mr. Smith stated that it was over two weeks since this hay had been cut, and that during the past eight days they had not been able to do anything toward curing it. Mr. Smith then conducted me through the college building, showing all the dairying utensils and the modes of using them. We visited the byre, where twenty-eight superior short horn milch cows are kept in winter time, but they are now out enjoying the luxurious pasturage which seems to prevail everywhere around here this season. The floor of

THE BYRE

consists of concrete and the stalls are double and made of iron. The milk room is large with concrete floor and plastered walls and ceiling. The milk is set in wide tin pans, about four inches deep, and these pans are placed on bench-like tables raised about three feet from the floor. In an adjoining room there are a number of different sorts of churns and butter workers, also various kinds of milking pails and vessels for raising the cream in, among which I observed the Cooley can for raising the cream by means of ice water, but as ice is a scarce commodity in this country, it is seldom or never used in the dairies, and the shallow setting mode of raising the cream seems to be universally adopted. I had an opportunity of examining and tasting the butter made here and it was certainly equal, if not superior to anything that I ever saw in Montreal. We then went into the class room, where about a dozen young ladies were engaged writing out answers to a number of questions written on the blackboard. I copied several of the questions, which were as follows: "What is meant by the animal odor of milk?" "What the effects of it?" "What circumstances tend to increase it before milking?" "Does it increase before milking, and, if so, in what cases?" "In putting up a dairy what are the chief points to keep in view?" "How can cleanliness be facilitated in constructing a dairy?" "How far can convenience be secured?" "What means contribute to secure a steady temperature?" "How can you keep down the heat in summer or raise it in winter?" The class had not completed their answers to these questions, but I was permitted to examine several of their papers, which showed that the writers possessed a good deal of knowledge about the subjects before them. In answer to one of the questions about the chief points to be kept in view in the construction of a dairy, one of the girls had written as follows: "1st, Cleanliness; 2nd, Convenience; 3rd, To be of uniform temperature. A hard floor is the best floor for a dairy. It should be as far as possible from where the manure pile is located. The best place for a dairy is at the south or south-west side of the manure heap." I do not think that the young lady who wrote this answer intended that the dairy should be located at the south or south west side of the manure heap, but as far as possible from it in that direction, as it is from this quarter that the prevailing winds do blow. The

RULES

for conducting the school are as follows: "Rise at 6 a.m.; 6 to 6.30, dress and devotional exercises; 6.30 to 7, take part in milking the cows, &c.; 7 to 7.30 in the dairy; 7.30 to 8, make up beds and attend to housework, cooking, &c.; 8 to 9, breakfast and free time; 9 to 10, lectures, explanations and examinations; 10 to 1 p.m., practical demonstrations in the dairy and general dairy business; 1 to 2, dinner and free time; 2 to 5.30, part in the dairy and part in domestic business alternately; 5.30 to 6, milking cows, &c.; 6 to 6.30, in the dairy; 6.30 to 7.30, supper and free time; 7.30 to 8.30, reading on subject of lectures, or needlework; 8.30 to 9, devotional exercises and retire to bed." In the dairy school there are two terms of six weeks each, one term in midwinter and the other in midsummer. The fee for each term is £3 ($15), payable in advance. This fee covers board, lodging, washing and medical attendance when necessary. Several prizes are given of from £1 3s to £1 5s for proficiency in the written examinations, for butter making, and for general dairy work. There are also special prizes given for proficiency in cooking, which is also one of the subjects taught in this school. Non-resident students are admitted at a fee of 15s per session. Some of the young ladies who attended this school last year have since become noted for the excellent quality of and high prices realized for the butter made by them, and the superintendent has had numerous applications from noblemen and extensive farmers throughout the country wanting to secure the services of dairymaids who have been instructed in the school. In the intervals between the sessions of the dairy school there are conducted agricultural classes for youths who wish to acquire a knowledge of the most approved modes of farming. Each of these terms continues four and a half months and the fee for each term is £7 10s. In the instruction given to the pupils, prominent attention is paid to dairy husbandry, including the winter feeding of dairy cows for the production of butter. Instruction is also imparted in the general branches of education, including farm accounts, surveying, levelling and mapping. Lectures are given (1) in agriculture; (2) chemistry and geology, in their application to agriculture, by a chemist; (3) in the structure and diseases of farm animals, by a veterinary surgeon; and (4) in natural history, including the habits of parasites and insects which injure farm crops, &c. The college buildings and farm were formerly used for a number of years as an agricultural school connected with the National School system, but it was not successful, and the project was about to be abandoned when a number of gentlemen in the vicinity of Cork subscribed large sums and added to it the dairy school in 1879, and these gentlemen continue to pay a large portion of the cost of keeping the school in operation. Both departments are now increasing in interest and in the attendance of pupils, and when the advantages of the training here become better known and appreciated by the farmers it is probable that the number of pupils in both departments will greatly increase. Besides the instruction given to pupil farmers, there is carried on upon the farm a series of experiments on the value of certain manures in the growth and cultivation of potatoes, also experiments on the productiveness and freedom from disease of the different new and old varieties of potatoes. After bidding good-bye to the obliging superintendent and his kind helpmate, I returned to the city and visited

THE WORKHOUSE

where 2,700 indigent persons find board and lodgings at present. There are quite a number of large buildings occupied by the poor folk and a very high stone walk surrounds the whole grounds. The gate is kept carefully shut and guarded as if it were a penitentiary. Before being admitted within the enclosure the visitor has to answer satisfactorily a number of questions through a small aperture in a side door. By the aid of Dr. MacVicar's letter of introduction I secured admission and an "able-bodied pauper" was ordered to conduct me over the establishment. Unfortunately most of the keepers were absent at the regatta and nearly all the buildings were locked up, so that I could not see the interior. I passed out through a carefully guarded gate into a field containing about three acres of vegetables, potatoes, cabbages and turnips which are grown for use in the institution. I was somewhat surprised to see so many weeds usurping the place of the crops when there were so many idle hands around. In one of the yards there were a number of able-bodied men at work breaking stones, I and I was told that the females do a good deal of sewing and knitting, but all whom I saw were idle. The man who accompanied me said that his daily rations consisted of eight ounces of Indian meal made into stirabout with a pint of milk for breakfast; four and a half pounds of boiled potatoes and a pint of milk for dinner, and twelve ounces of brown bread and a pint of "co" (a decoction made from cocoa) for supper, but what seemed to give him most trouble was the being deprived of tobacco. There are two hospitals within the walls of the establishment, one for fevers and contagious diseases and one for ordinary complaints. There are also two churches, Protestant and Roman Catholic, but the former is very small, as but few persons of that persuasion are to be found among the paupers of Cork.

THE CORK BUTTER EXCHANGE—INSPECTION—BUYING AND SELLING—CHOOSING INSPECTORS.

COLERAINE, July 27th, 1882.

The readers of the *Witness* must all have heard of the Cork butter market, which is the largest butter market in this country, perhaps in the world. The

DAILY SALES

here at present range from 1,400 to 3,000 firkins, each firkin containing about 75 lbs. This forenoon I visited the Butter Exchange in this city and was kindly received by the very obliging weighmaster, Mr. John Burns, who not only answered all my enquiries about the mode of doing business here, but sent a man around with me to explain the different examinations and markings to which the firkins were subjected while in the enclosure. The Butter Exchange consists of a large enclosure covered with a glass roof and paved with pebble. The butter is received from six to ten o'clock a.m., after which hour the doors at the end where the butter is admitted, are closed and no more received for that day. For several hours before ten o'clock, numerous carts are to be seen conveying the butter from the railway stations to the Exchange and in the inside of that building, the butter is being arranged in five sections, separated from each other by iron railings. Four of these sections are devoted to ordinary salt butter, and the fifth contains the "Fine Mild." The firkins are made of oak and closely hooped at each end like pork barrels. The hoops on the firkins containing the ordinary butter retain the bark on them, but the bark is removed from the hoops on those containing the fine mild butter. At 10 o'clock the Butter Inspectors begin their task of examining the numerous firkins which crowd the market. An inspector is appointed to each section, and in order to prevent the possibility of any fraudulent collusion between the Inspector and the buyers or sellers, they do not know until the last minute which of the five sections they are to inspect, but when all is in readiness each inspector draws a paper, marked with the number of the section, from a box and at once proceeds to work. As each inspector has to examine from four to six hundred firkins in the course of two hours, he has two or three assistants to aid in the work. One of these removes the end of the firkin, which has been only temporarily fastened over the top; another assistant thrusts the trier into the butter and hands it to the Inspector, who smells, tastes and carefully examines the grain and color of the butter. He then publicly announces his decision, and if the butter has any defects states them aloud, for the information of both buyers and sellers, or any other interested person who may be present. The advantage of thus openly stating the defects of the butter are not confined to the buyer, but the seller will thus learn wherein his butter is defective and will be able to instruct the maker so that these defects may be remedied in that made in the future. The firkin is then marked with one stroke if it is No. 1, two strokes if it is No. 2, and three strokes if it is No. 3, &c. It is then passed down to where a number of men are employed

BRANDING

on them with hot irons the gross weight, the tare allowed, also the day of the month, the letter of the Inspector who made the examination, and the quality of the butter. The tare of each firkin has been marked on them before they were filled, but if there is suspicion that it has been soaked in water so as to increase the weight, a corresponding addition is made to it by the marker. If the seller is not satisfied with this, the hoops are removed from one end, the butter turned out and the empty firkin weighed. At a quarter to eleven a bell is rung, and at this signal buyers and sellers go into a large room to begin trading, and the way it is done is somewhat novel to a stranger. One buyer writes on a slip of paper that he will take fifty firkins of No. 1 at yesterday's prices, another writes on a similar paper that he will take one hundred firkins at one shilling (per cwt.) more than yesterday's figures; another writes that he will take two hundred firkins, No. 2 at sixpence less than yesterday's figures, and so on until all have made offers for whatever quantity they want. A committee of buyers and sellers is then appointed who take these slips of paper with the offers written on them, and after retiring to another room, strike an average price for each quality, guided by the offers made. Thus—If there are bids for five hundred firkins of No. 1 at 103s, and three hundred firkins at 102s, the price is fixed at 103s for the whole and the buyers who offered 102s have to pay 103s, and if some of the buyers have offered 104s, they will have to pay only 103s, and they have the advantage over those who made the lower offers, that they get the number of firkins bid for, while if there are not sufficient firkins of the quality named, to meet the demand for that quality those who made the lowest bid are left unsupplied. The price thus fixed is posted up in the exchange and also telegraphed all over the kingdom as the regular prices of the day. The buyer then removes his purchase to his own store room, and a part of the surface butter on the top of the firkin is scraped off. It is then covered with a cotton cloth, over which a thin layer of salt is spread, and the top of the firkin fitted down into its proper place. Pickle is then introduced through a small hole bored in the end which is afterward plugged when the butter is ready to ship to whatever part of the kingdom it is required. The greater part of the butter brought to this market is consigned here by the makers or local dealers throughout the south and west of Ireland. A considerable portion, however, belongs to merchants of Cork who have agents attending the markets in the various towns in the butter-making districts. Complaints are very often made in various parts of the conduct of these travelling agents, who form rings, and thus secure the butter at considerably lower rates than the prices at Cork would warrant. This cornering of the local markets causes most of the larger dairymen to consign their butter directly to Cork, and often they come with it themselves. I observed that there was a wonderful uniformity in

THE COLOR OF THE BUTTER

in each firkin, scarcely any of them having differently shaded layers as is so frequently seen in Canadian tubs. One of the inspectors informed me that in most cases the contents of each firkin is made up at one time and thus a uniformity in color is secured. He said that farmers with small dairies often club together and churn their cream and make up their butter together and then pack it into one firkin. When it is sold, the price is divided amongst the various persons interested, in proportion to the number of their cows or the quantity of the cream put into the common churning. Some people buy roll butter in the market and mix it with their fresh churned butter in order to fill up the firkin at once, but generally second or third quality butter is made by such mixings. The butter inspectors display wonderful skill in their business, and the mode of choosing them is as follows: When a vacancy occurs an advertisement is inserted in the various newspapers, stating that on a certain day applicants for the office of inspector will be examined. On the day appointed half a dozen or more applicants will be in attendance, and after the usual business of the day is finished, the market enclosure is cleared of all persons except the weighmaster and one assistant. These select forty firkins from those just inspected, and range them in a long row. This row contains 1st 2nd, 3rd, 4th and 5th quality and also fine mild butter, each firkin being enclosed in a sack so as to hide the brands which were recently put on them at the previous inspection. Each of the candidates is now required to pass along the row of firkins, carefully inspecting each one and recording his decision in a book which he carries with him. When this is done the candidates are ordered to retire, and the weighmaster with his assistant selects twenty firkins out of the forty, which the candidates have just been inspecting, and placing them in a row by themselves the would-be inspectors are directed to inspect them again and record their decisions, each in his pass-book as in the former inspection. The decisions arrived at by each candidate are then compared with that previously branded on the firkins by the regular inspector, and as twenty of the firkins have been twice inspected by each candidate, his decisions in the latter case are compared with his former ones on the same firkins, and the person whose two inspections agree most closely with that of the regular inspector, and with each other, is appointed to the vacant inspectorship. There is no regular inspection done at the local butter market, but each buyer inspects for himself the firkins or tubs which he intends buying.

A DAY IN CONNAUGHT—THE LIBERATOR—GALWAY.

COLERAINE, July 27th, 1882.

Every day's experience in this country brings much to interest the traveller that no doubt is quite commonplace to those residing here Taking a stroll out from

ENNIS

early in the morning I passed a very fine monument of Ireland's liberator, Daniel O'Connell, which has been erected on the site of the old court house, on the very spot where Dan took his first determined stand on behalf of Catholic Emancipation. It appears that somewhere over a half century ago. Daniel O'Connell was chosen by the electors of Clare to represent their interests in the House of Commons, but when returning thanks to his supporters gathered in the Court House in Ennis, he publicly pledged himself to refrain from taking the oath required of members of Parliament at that time and, further, that he would not rest until he had secured for his Catholic fellow subjects emancipation from the disabilities under which they then labored. When O'Connell refused to subscribe to the oath required of him at the table of the House of Commons, his election was declared null, and a new election was ordered for the County of Clare. The people of Clare very wisely elected O'Connell again, and not very long afterward he secured the passage of the Catholic Emancipation Act. The present beautiful monument to O'Connell which stands on the spot where he took the first stand for Emancipation, was erected through the efforts of a poor cobbler named Michael Considine who, dressed in a suit of green, travelled over a good part of Ireland and some parts of America, and, being possessed of a good share of native eloquence, succeeded in securing from his co-patriots the money required to erect this monument to the memory of the man whom so many persons on both sides of the Atlantic delight to honor. Considine now supports himself by means of a small shop in Ennis where he sells newspapers and cheap periodicals. I afterward visited the market in Ennis, where there were offered for sale a good many calves, young pigs, loads of turf, with a variety of vegetables, such as potatoes, cabbages, &c., and also some butter rolls. The calves brought from 40s to 60s each, or from two to three times as much as they would bring for veal in Montreal market, but they seldom kill a calf in these parts, as there is such an active demand for young stock to be fattened on the rich pastures of Leinster. The young pigs were mostly superior animals from six to seven weeks old, and sold from 15s to 20s each. A cart-load of turf brought from 5s 6d to 6s, but it is unusually high priced at present owing to the great difficulty in drying turf in the almost continuous wet weather. For

A CART LOAD OF BOG-FIR

9s was asked, which I considered cheap, as compared with the price of firewood in Montreal. Good large cabbages were sold at two for three ha'-pence and potatoes (fine large ones) sold at 7d to 8d per stone. In passing through the streets I observed the scavengers at work removing the refuse deposited on the streets during the night, and observed that night soil formed a considerable portion of it. From Ennis I went northward for thirty-six miles over a very rough, limestony country to Athenry (pronounced Athen Rye, with considerable accent on the rye). The rocks here consist almost entirely of gray limestone, but they have been subjected to such upheavals as to almost entirely destroy any resemblance of layers or strata, and the whole has become a mass of unshapely boulders. In many places the stones almost cover the face of the ground, while in other places they are gathered into heaps, or made into fences, which are a great improvement on the ungainly hedges and ditches which disfigure the landscape throughout the greater part of Ireland and resemble a Canadian brush fence more than the ordinary fence in a civilized community. As the stones were very plentiful and some means had to be employed to get rid of them, the fences are very numerous and the fields very small and contain less than an acre of land on an average through this county. I have often wondered why Irishmen in the Ottawa county take so readily to rough stony land, but, it is probable that it is because it reminds them of the scenes of early life in the "Immortal Clare." The crops were generally good looking and I saw a good many fields of wheat which seems to do well on the dry knolls of this stony country. A considerable number of small ponds and lakelets and also an occasional grove of trees added considerably to the beauty of the landscape. At a place called Ardrahan, some twelve miles south of Athenry, there were some very beautiful and well cultivated fields, and also groves. The land here is also more level than further south.

ATHENRY

was formerly a walled city, and was the Capital of Connaught before the English invasion. It contains a good many old ruins, and I offered a friendly Irishman (who constituted one of a number of idlers around the railway station) a sixpence if he would show me round the old walls and ruins. Not that I cared so much to hear old yarns about old ruins, but I wished to get him away from his companions in order to learn more about the troubles caused by "Moonlighters" and "Land Leaguers" in this vicinity. I soon found that this man, like many others of his countrymen, consider Americans as the natural friends of Ireland and foes of England and landlordism. Consequently, he looked on me as a sympathizer rather than a hater of moonlight expeditions for the purpose of mutilating the cattle and otherwise destroying the property, if not the lives, of the landlords and their agents. After surveying the ruins of King Roderick O'Connor's old castle and an old Abbey we came to an old church which has been more or less restored within the past two hundred years. The building was formerly a Roman Catholic Church, but since Cromwell's time it is used by the Church of England while the Catholics have had to build another church for themselves. Close to the town there is a pretty large tract of level land which is now all in pasture. This land I was informed belongs to a gentleman named Lambert, who also owns a considerable portion of the town. It was formerly let out to tenants at five pounds per Irish acre. (The ratio of the English to the Irish acre is as 30¼ is to 49). This rent was considered too high, and as the landlord refused to reduce it, the tenants refused to pay and were evicted from the land, but no other tenants dare to occupy the place of the evicted ones, and the landlord has to be guarded by two policemen and two soldiers in all his movements around this part of the country. I am sorry to add that there are too many other landlords and their agents who have to be guarded in a similar way, and even then they are not safe. There is a Major Lobdel, who owns a very large farm in this neighborhood, but he farms it entirely himself, employing numerous laborers at from

EIGHT TO NINE SHILLINGS PER WEEK

without board. This man is well liked in the neighborhood as he employs so many laborers, and although the amount he gives them in wages is not large, yet the amount of work done by each is disgracefully small, as the people in this part of the country have reached to considerable perfection in the art of "killing time" while pretending to work, and three of them can spend a whole day in doing what Canadians would consider a fair day's work for one man. My guide informed me that the tenant farmers around these parts have ceased paying rent for two years past and they openly declare their intention of paying no more rent. The present distress of many of the landlords, who are suffering considerable hardships for want of their usual income, does not seem to cause their tenantry any concern, nor are they ashamed of the fact that moonlight invasions and agrarian crimes are quite common in these parts, while criminals are very seldom brought to justice. From Athenry I went westward to Galway, over a pretty good but stony country, with poor soil in many places, some of the pasture fields having more heather than grass growing on them. Galway is beautifully situated on rolling, dry land, near the sea-shore, I think that the sea breezes blow rather hard here, for the trees and bushes have their branches turned all toward the east and northeast on all places where they are exposed to the wind from the Atlantic. The market was nearly over when I came, but a few miserable specimens of sheep and lambs and young cattle remained unsold, for which very high prices were asked. The country people here conversed together in Irish, but they all seemed able to speak English. I found that the "no rent" system is being generally followed here as well as in most other places in the west of Ireland. It matters little whether the landlord has been good and kind or severe to his tenant: they have all to do without their rents for the present at least, and that in many cases where the tenants are laying past more or less money yearly, and if they only worked as hard as men in similar circumstances have to do in America, most of the tenants might save money yearly, owing to their simple and inexpensive mode of living. When these people would complain to me of the scarcity of labor and the low prices paid for it as well as the cruelty of some of their landlords, I would give them a free invitation to come to Canada, where they could get plenty of work at high wages and a free farm in the North-West if they choose to work it, where landlord's evictions and policemen's batons were almost unknown, and they need not take off their hats to any person they met. The poor people would reply in a pathetic manner: "Ah, yes, but yese have to rise early and work hard in Amerikay." The thought of having to rise early and work hard seems to weigh very heavily on the ordinary Irish mind and I believe is the chief cause of their choosing rather to remain in poverty among the bogs and rocks of Ould Oirland rather than come to "Amerikay" where they could have the utmost freedom with peace and plenty. At near four p. m. I took the train for Ballinasloe, which town I reached at about 5.30, after passing through several enormous bogs, which in some places towered up on each side of the railway so as to prevent a view of the country behind. I am indebted to the kindness of the Rev. J. W. Whigham, the Presbyterian minister of Ballinasloe, who sent his servant man with his horse and car and drove me to the field of Aughrim in the evening. RUSTICUS.

Coleraine, July 27.

GRIMSBY CAMP.

(Special Correspondence of the Witness.)

ITS HISTORY AND ADAPTATION—ITS SUCCESS—ITS BATHING FEATURES—DR. TALMAGE, DR. WILD, REV. W. W. CARSON, REV. C. H. MEADE, AND OTHER PULPIT ORATORS.

GRIMSBY CAMP, August 22.

Twenty-three years ago this beautiful woodland grove was opened as a camp ground, and continued to be opened annually with varying success until 1876. A joint stock company was formed under the name of the Ontario Camp Ground Company. One of the conditions of the company is that its directors must be in good standing in the Canadian Methodist Church The present directors are Noah Phelps, president; D. B. Chisholm, vice president; E. C. Fairfax, secretary; J. B. Bouslaugh, treasurer, Judge Jones, Rev. Dr. Sutherland, Rev. H. Robinson, &c. The avowed object of the company is to provide a religious retreat, and its by-laws are protected by a special act of the Ontario Legislature. The provisions for services include a large open-air auditorium, beautifully shaded with lofty trees, and surrounded by pretty little cottages, forming a natural amphitheatre. A large wooden tabernacle stands near the auditorium for services in case of rain, and the prayer meetings, &c., and near that again is a pretty little erection called the boys' tabernacle, in which Sabbath school services and boys and girls' meetings are held. The entire grove is bordered by a cliff having a northern view of Lake Ontario, and presents at this season of the year the most delightful aspect for those in search of quiet, change and rest. There is a good landing pier, and the steamer "Empress of India" plies twice a week regularly to and from Toronto, besides extra excursions. On the other side of the grounds the Great Western Railway Company has a station. The grounds are amply supplied with spring and lake water, and an excellent system of drainage has been carried out by the Company. The hotel is large but very crude, and not in harmony with the beauty of the place. The Company have a scheme in hand, however, by which they hope to erect a fine new hotel facing the lake. The bathing accommodation is all that nature can provide. The water is as clear as that of Holy Well in North Wales, and the beach is a splendid bathing shore. No provision, however, is made for bathers, either in the shape of dressing rooms or dresses. If the Company will provide these things Grimsby would become one of the most popular bathing places in Ontario.

The grounds are supported by an entrance fee to all persons of ten cents each. Weekly tickets are issued at fifty cents. The Company pay their talent liberally. Dr. Talmage received $400 for his two sermons on Sunday and Monday, and Harrison, the boy preacher, was paid $200 for his two days' work. Judging by the work done, and the effects of their work, such men as the Rev. C. H. Meade, who will perhaps only receive half the latter amount for a whole week's hard service, Talmage and others are surely overpaid. But these men are the attractions to the place. The public come not at the call of the church to pray and to seek the salvation of men, but they come at the call of novelty and of fame.

The success of this entire undertaking, however, is assured, and whether it be considered in the light of a healthy resort for Christians morally and spiritually or as commercial undertaking it is satisfactory. The popularity of the place grows every year. The numbers last year being in excess of any previous year and this year being ahead of last.

Last Friday the Rev. Dr. Wild preached to a large congregation, among whom were many hundreds who came to Grimsby expressly to hear him. His sermon was an extremely able one—a masterly exposition of the omnipotence of the Saviour.

On Sunday and Monday Dr. Talmage preached to immense multitudes of people. Over 6,000 persons passed through the wicket on Sunday. Add to these the great number in hotel cottages and camp tents, and the still greater number who, in spite of all regulations, are mean enough to leap the fence to save ten cents, and there must have been over 10,000 persons present.

On Monday again a vast concourse of people were present. Dr. Talmage's sermons were characteristic, exhibiting in a most marked manner the dramatic power which he possesses. His argument was lost in his repeated lightning flashes of thought expressed in uncommon and striking language. Selecting for his text on Sunday the words spoken to Joshua, "There shall be no man able to stand before thee," he traced in a number of eloquent word pictures the various battles in which Joshua was the successful leader. He said that like Havelock he was "Old Forward," never turning his back upon a foe, and was a general who lead his army, not by taking a spy-glass up the hill two miles off to view the troops, but placing himself always at the head cried "forward, forward!" Referring to the battle at Gibeon he said the sun and moon stood still to accomplish God's purpose, and if a man can make a clock and stop it, set agoing again and stop it, God can stop the worlds he made, when he chose. He remarked, "It makes me sick to see some literary fops with a copy of Darwin under one arm and a case of transfixed beetles under the other patronizing the Almighty, and telling Him how to run the world and talking about the "survival of the fittest," when everybody knows that if the fittest only survived they would not be here.

On Monday Dr. Talmage preached from Luke 19 chap., 10 verse: "The Son of Man comes to seek and to save that which is lost."

Several other gentlemen have delivered sermons here of great power, notably that of the Rev. W. W. Carson, of Hamilton, whose discourse on the value of man last Sunday morning was singularly thoughtful and eloquent. Among those who heard that sermon there will be many who will never forget Mr. Carson's grand exposition of Matt. x. 31: "Ye are more value than many sparrows." It was a perfect piece of logical composition, delivered with great power, and containing many passages of striking eloquence. Rev. Thos. Collings, of St. Catharines, Rev. Geo. Brown, London, Ont., Rev. John Kay, of Thorold, Rev. Manly Benson, and Rev. Mr. Calvert, who is known here as the boy's friend, have all been conspicuous for their active service, and, last but not least, the Rev. C. H. Meade, who conducts the singing, leads a prayer meeting, or preaches a sermon as required. On Monday evening he preached in the tabernacle to a crowded audience with great power and pathos, the whole congregation being moved to tears and prayer and many expressing a desire for salvation. I must not forget to mention the conductor of the services, the Rev. W. S. Griffin, D.D., who is the general of all the proceedings, and who with a quaintness all his own directs the entire machinery, and announces all the plans from day to day.

A DISCOVERY OF A GRAND HALL, NEAR THE PANTHEON, AT ROME.—A grand hall, exceeding in length the full interior of the Pantheon, and supposed to be the vestibule of the Pantheon itself, or rather, a connecting hall between the Pantheon and the Baths of Agrippa, has been recently explored. This hall measures 140 feet in length, 50 feet in width, adorned with eight splendid fluted columns of Phrygian and Numidian marble. Within this hall is a niche, where is a pedestal 12 feet wide by 11 feet, large enough for a colossal group of sculpture. It is supposed that within this hall stood the celebrated bronze "Athlete" statue, which Agrippa brought from Greece, and placed in the portico of his warm baths.—*American Antiquarian.*

LITERARY REVIEW.

EDUCATIONAL WORKS.

Two new volumes of Gage and Co.'s Educational Series (Toronto), are a life of *Lazare Hoche* a French general under the Directory, in French by E. DeBonnechase, with references to the Grammar of De Fivas, and Notes by W. Tytler, B.A., of the Guelph High School; and a volume, containing, *Marmion* and *Burke's Reflections on the Revolution in France*, with Introduction and Copious Notes by John Millar, B.A., Head Master of St. Thomas Collegiate Institute, containing a map of the border regions alluded to in the poem.

Exercises in English Composition (Longmans, Green & Co., London), is a useful work, by Robert Skakel Knight, Fellow of the Royal Society of Literature, and a native of the Province of Quebec. In arranging the exercises the author has aimed at presenting something solid "which an unformed empty mind may work upon, so as to obviate a painful vacuum pumping process to which young people, even during a heavy press of class-work, are frequently subjected."

Mr. John A. Jennings, well known in Dublin as an elocutionist and giver of readings, has, at the suggestion of those interested in education in that city, compiled a reader under the title of *The Modern Elocutionist* (Dublin: Carson Bros.), which brings together a number of selections not so familiar as those in ordinary school readers. It is dedicated by permission to the Duchess of Marlborough, and was at once adopted in a number of educational establishments in Dublin and elsewhere. It covers over five hundred pages, and contains a great variety of readings. The first edition having been rapidly exhausted, a revised and enlarged one has recently been published.

THE COLONIAL INSTITUTE.

The Report of the Proceedings of the Royal Colonial Institute, London for 1831-82, contains papers "Sierra Leone," "Natal," "Mauritius," "South Australia," "The Commercial Advantages of Federation," and "Imperial Defence." "England's Colonial Granaries," by Robert G. Webster, Esq., contains six pages on the wheat fields of Canada, with the prediction that "at some future date, when steamers shall ply between Hudson's Bay and the Mersey, the Clyde or the Thames, it will be possible to sell Manitoba wheat in the United Kingdom at 28s. a quarter, and to do so at as large a profit as that now obtained from the sale of United States wheat at 48s." An exclusively Canadian paper is, "The Progress of Canada and the Development of the Great North-West," by Lieut.-Col. T. Hunter Grant, of Quebec. The reading was followed by a long discussion, in which the Duke of Manchester, Mr. A. Staveley Hill, Q.C., M.P., Mr. W. Fraser Rae, Col. Arbuthnot, R.A., Mr. James Rankin, M.P., Mr. W. Farrar Ecroyd, M.P., and others took part.

TEMPERANCE.

The National Temperance Society (New York) publishes at 10 cents *The Philosophy of Prohibition*, by Dr. Bascom, of the Wisconsin University. Among many other good points, Dr. Bascom makes a strong one against continuous moral suasion, to which those who despair of prohibition wish to remand temperance people. He shows that moral suasion when pushed beyond certain limits is irrational and has no practical result.

Temperance men grow weary of proofs with which they are perfectly familiar, and which tend to no new issue. The safe-and-sound men of the world, the average moral men of the world, who stand on the thermometer at mild summer heat—a heat that keeps things green without growth—still soon weary of persuasion, which is threadbare, is as often done poorly as well, and when done best lacks grip. In the meantime the saloon-keeper carries on his work undisturbed; those who are really exposed to danger rarely come near the ineffectual oratory; and those who are actually caught in the wheels pass on and are crushed.

Another temperance tract is entitled *The Ethics and Policy of Prohibition*, by C. J. Chubbuck, of Towanda, Pa., which is a strong appeal to voters to exercise their rights as electors to secure the suppression of the liquor traffic. Mr. Chubbuck says:

"Men who see and know the right, but wait for it to become popular before they give it their support, give by such conduct proof that they care more to please men than they do to serve their Maker. Their regard for popularity is greater than their regard for God. If men were to wait for the right to win, or become popular before they give it their support, right never would win by their aid, and they will always be wrong. I know no case where such men are commended in Holy Writ. Christ condemned them in the strongest terms. He represented them as blocking the door way to the kingdom of heaven: they would neither go in themselves nor permit others to do so. They were careful to be just in small things that they might be thought to be righteous by men and gain applause, but they were like whited sepulchres, were hypocrites, and He did not fear to tell them so. The desire to be on the popular or winning side of any question rather than to be right before God and one's own conscience, is the bane of our civilization, corrupting both Church and State. It is the dry rot of popular Government that will cause the whole superstructure to crumble into dust and disappear.

S. S. PUBLICATIONS.

Eben Shute, of Tremont Temple, Boston, publishes a useful little blank book, arranged as a Sunday-school Class Birthday Book and Monthly Remembrancer. The idea is that one day in each month special prayer should be offered by all the class for some one member, and that this day should, if possible, fall upon the birthday of the teacher or scholar. Mr. Shute also publishes "The Wide Awake Series o Questions on the Lessons" for class distribution, and a tract entitled, "Pray for Your Pastor."

SCOTCH FARMERS.

Lippincott's Magazine opens with an illustrated paper by Miss Rose G. Kingsley, a daughter of the late Canon Kingsley, describing the Musée Plantin Moretus, at Antwerp, which contains the relics of one of the most famous printing establishments in Europe in which the original Polyglot Bible was printed. Famous paintings and engravings and quaint old presses and cases are shown here. "Through Great Britain on a Drag," describes the experiences of a wealthy Scotch-American who, with a party of friends made a coaching trip last summer from the South of England to the Highlands of Scotland. An incident in the Scottish trip is thus narrated

Of Sanquhar I only remember a walk in the twilight and a talk with some hedge-cutters. One of them seemed a gloomy fellow, and said that America was a "deal soight" better country than Scotland for a poor man.

"But this is a beautiful country," said the railway manager, who was our spokesman.

"Ay, it's a bonny country," said the man; "but whaur's the gude o' that, when a man canna win a leevin' out o't?"

"Times are hard, then?"

"Ay."

"Are the landlords severe?"

"Weel, I'd no say that," put in the other hedge cutter; "there's farmers that will no hae paid rent thae three years."

"Why don't the landlords turn them out?" said the railway manager.

"Weel, I'm doubting it will come to that."

"Have the harvests been bad?"

"Na, they've no been sae bad, but the farmers here are a kin' o' gentry, ye ken, an' they try to match the gentry."

"Deal o' riotous leevin' about here," said the gloomy man.—"horse-racin', drinkin', an' a' that."

"They're no a' loike that," said the more cheerful man.

"Maist a'," said the gloomy man.

"Na," retorted the other, "there's some pays prompt. There's a farmer, sir, wi sax herds pays nineteen hundred pund rent, an' anither left twenty thousand pund in his will. Farmers are a kin' o' lairds, ye ken."

MAGAZINES.

The September *Wide Awake* has a great variety o interesting matter for the young folks. The Chautauqua Reading Course for the month concludes the series for the year, and the next course will include a series of "Health and Strength" papers by Prof. Sergeant, of Harvard.

The Living Epistle is the title of a 64-page monthly, edited by the Rev. H. J. Bowman, Cleveland, Ohio. It is devoted to "Scriptural Holiness," and contains the utterances of many leading Methodist divines on this subject. ($1.00 a year.)

OTHER MAGAZINES AND PAMPHLETS.

The Homiletic Magazine, Randolph & Co., New York, ($3 a year). *Agricultural Returns* to the Ontario Bureau of Statistics. *Sunday Harvesting* and *Occasional Paper, No. 106*, issued by the Society for Promoting the Due Observance of the Lord's Day, London. *Our Little Ones*, Russell Publishing Company, Boston. *Michigan and Its Resources*, with map, (W. S. George & Co., Lansing), compiled under authority of the State, by the Commissioner of Emigration. *Our Continent*, conducted by Albion W. Tourgee, Philadelphia. *Littell's Living Age*, Boston. *Brown's Phonographic Monthly*, New York.

AFRICA FOR THE AFRICANS.

PROFESSOR BLYDEN'S ACCOUNT OF THE OPPORTUNITIES OFFERED TO NEGROES IN LIBERIA.

Among the passengers on board the White Star steamer "Baltic," which arrived in New York last Tuesday, was Professor Edward Wilmot Blyden. President of Liberia College, in the republic of Liberia, Africa. Probably, in a greater degree than any man living, he represents the possibilities of the African race. He is a full-blooded negro, and was born in the Isle of St. Thomas, in the West Indies, in 1833. At an early age he went from St. Thomas to Liberia, where he received his education at the Alexander High School, of which he afterward became Principal. In 1861 he accepted the professorship of languages in the then new Liberia College. He was also Secretary of State for Foreign Affairs of the republic for several years and conducted different diplomatic missions to neighboring states in a manner which reflected great credit on his tact and understanding. In 1866 he visited Palestine and Egypt and published an account of his travels in a volume entitled "From West Africa to Palestine." Professor Blyden has contributed many articles to *Fraser's Magazine* and other English periodicals and the *Methodist Quarterly Review*, of New York. In 1878 he was appointed Liberian Minister to England. He was elected an honorary member of the Athenæum Club, one of the most exclusive clubs in London. On one occasion he was entertained at dinner by Dean Stanley, where he met a number of distinguished persons.

A *World* reporter called upon Professor Blyden yesterday at his temporary residence, No. 250 West Twenty-sixth street. "This sort of weather makes me wish myself in Liberia," he said; "we don't get it so hot there. The temperature seldom reaches 85 in the shade, and sometimes is as low as 65."

"Will you tell me the object of your visit to this country?" said the reporter.

"I wish to awaken public interest in the Liberian College, of which I am President, and to secure a larger endowment fund, that we may increase the faculty and obtain greater facilities for conducting our educational work. At present the college has sixteen pupils in the collegiate department and thirty-four in the preparatory department. The course is completed in four years, and our curriculum includes the usual English branches of study.

"I have another object in view," continued Professor Blyden. "We wish to get a river steamboat of moderate size for the accommodation of passengers and the conveyance of freight to and from the seaboard to different points on the St. Paul's River as far as the present head of navigation or rapids, about twenty miles from the coast. To carry out this object a company of Liberian citizens has been organized at Monrovia to raise means to build a boat to promote improved and permanent means of intercourse between the coast and interior settlements. The boat will cost about $6,000, and one-half of that amount has been subscribed. We are now soliciting the taking of shares of $25 each to raise the balance from persons who are interested in the progress of civilization on that continent."

"What is the outlook for the Liberian settlement?"

"The prospects are very promising. We are getting a good class of immigrants, especially from North Carolina. Our rate of increase by this means is from two to three hundred a year. A number of Kansas refugees have settled at Brewerville, about one hundred and fifty miles from Monrovia. They have coffee farms and raise sugar cane, vegetables, ginger, arrow-root and rice for their own consumption, as well as live stock. Three years ago a settlement was established at Arthington, about thirty miles from the coast, by negroes from the South, who had been slaves in this country. They are doing well.

"What is the relation between the native Mahometan tribes of Africa and the Christians?"

"Christianity has not had a fair chance in Africa. In the first place missionary operations have been confined to the unhealthy districts adjacent to the seaboard, and under such circumstances the efforts of the missionaries have been irregular. Men cannot do justice to their work when they are continually ailing. Again, the natives among whom the missionaries have labored have also come into contact with European traders—Christians they claim to be—and their practices have presented such a flagrant contrast to the teachings of the missionaries that what little good the latter have been able to accomplish in the face of the obstacles with which they have had to contend has been more than counterbalanced by the mischief wrought by the former. The children who attend the missionary schools are, as a rule, the children of the lower class of natives and their home influences are not of a character favorable to the growth of Christian precepts. The Mahometans, on the other hand, coming from the east and north, belong to what you may call a cognate race to the negro. They are already acclimatized; they settle in negro towns, intermarry with the people and entirely amalgamate with them. By this means they come in contact with a better class of people and their influence is regular and continuous. The Arab traders do not bring with them the demoralizing commodities which form a large part of the stock in trade of the European traders. Hence travellers in Africa along the coast find that the negroes who are Mahometans give greater evidence of self-respect and self-reliance than do most of those negroes who are Christians. It is a very serious and by no means agreeable contrast for the Christian world to contemplate. The Mahometans everywhere strenuously oppose the introduction of ardent spirits into the country. If it were not for them, intoxicating liquors would have wrought fearful havoc among the native tribes.

"The enterprise of rumsellers meets with tremendous opposition from the Mahometans in Africa. It is not, therefore, surprising that superficial Christians who engage in commerce in those parts should entertain very strong feelings against Mahometanism."

To illustrate these points Mr. Blyden read the following extract from "Trading Life in Western and Central Africa," by John Whitford, an English traveller who was for twenty-two years a resident in Africa:

"It appeared very remarkable that the cry for rum ceased at the confluence of the Niger and the Bonny, strangely coincident with the limits of the missions and the propagation of the religious and other habits of the white men. Rum is decidedly flat at Egga; we could not sell a single gallon, and were obliged to take ninety puncheons of it back to thirsty Nitsha. The people did not like it, will not drink it, and are much better off without it; but, in the order of events, they will take to the horrible stuff, and kindly too. We only parted with a few cases of Holland gin, and that was more for the sake of the attractive green boxes than for the liquor, but the liquor would not be thrown away."

When asked what was the social status of the negro in Europe as compared with his position here, Mr. Blyden said: "There is no room for any comparison. The negro as a class is unknown in Europe. If there were six millions of negroes in England they would be treated much as they are here. I do not regard the reception I met with there as indicative of the general feeling toward my race. I went to England as the accredited Minister of the Republic of Liberia and no social barriers were opposed to me. While my sympathies are with my own race and I have cast my lot with them and labor for them, I do not entertain any feelings of resentment toward the Americans because of the present attitude toward the negroes here. Human nature is human nature. The negroes have been but recently released from bondage. The evil effects of their early training still remain in a large measure. They are still the servant class, and gentlemen will not meet their servants on terms of equality. It is not easy to distinguish those few who by their talents and industry have raised themselves to a higher level. Civil enactments will accomplish little in the way of gaining social recognition for the negro

"The two races should never amalgamate. I say to the negroes here: 'Come and join us in Liberia, where we have a country of our own.'"

Mr. Blyden then related an incident that happened to him a day or two ago. He had gone to High Bridge with a friend and stopped at the Atlantic Casino to obtain some refreshments. Their first order was attended to, but when a second was given, a consultation having meanwhile taken place among the attendants, they were told that they could not be accommodated further, and were politely requested to withdraw. "My people are in exile here," said he to the reporter, "and I am content to share their fate." Mr. Blyden will remain in the city a few days, and then will go South to study the characteristics of the negroes there. At present he is engaged in translating from Arabic to English a book on the laws of Central Africa, and he expects to complete his task in a few months.—*N. Y. World.*

THE OVERFLOW.

Perhaps, says the London *Daily News*, the most striking idea of the effect of the Nile water is obtained from standing on the summit of the Great Pyramid of Geezah. The pyramid stands on the desert, but close to the cultivated soil—the cultivated soil in this case means the land which has been covered by the inundation of the great river. To the height which its waters have reached the color is green from vegetation; where it has not touched is desert. So distinct is the line of green with the buff-colored sand that looking down from the pyramid it seems as if you could put one foot on the cultivated and another on the unirrigated ground. The sharp, defined edge of a well kept lawn and a gravel path will picture the state of the case to the mind of any one. Gazing on this from the pyramid—and it can be seen as far as the eye can reach to north and south—the importance of the Nile water is realized. As high as the inundation rises there is growth and cultivation; food for man and beast is produced; where the water has not moved on the surface there is the desert sterile and bare, with a hot, monotonous sun glaring everywhere. The essential cause of Egypt's greatness in the past is realized as well as the continued political importance of the country to our own times.

In other days the overflow of the Nile was looked upon as the union of Isis and Osiris, and when the canals were opened in ancient times to let the water flow over the land, sacrifices are said to have been offered. A ceremony is yet performed which is supposed to have descended from these rites. It is now known under the Arab title of "Haroost e'Neel," or "The Bride of the Nile."

> The young, devoted bride
> Of the fierce Nile, when decked in all the pride
> Of nuptial pomp, she sinks into the tide.—*Lallah Rookh.*

A pillar of mud now represents the bride; it is made at the opening of one of the canals at Old Cairo, and it is swept away by the waters at the opening of the dam. The Mohammedan tradition is that one of their rulers substituted the mud pillar for a virgin which the Christians sacrificed every year. Sir Gardner Wilkinson doubts and believes that in A.D. 638 the Arabs continued the custom from the Christians, who received it from the Egyptians. He does not think it likely that the Christians would sacrifice a human being, and that it is quite possible that the Bride of the Nile was only a mud figure even in the older Egyptian period.

This ceremony is now gone through about the 10th of August, when the inundation is supposed to be approaching its highest. The first indications of the rise appear in Lower Egypt about the middle of June and continue till September, when the full overflow is reached. In November or December again the waters have disappeared and the Nile is generally reduced to its ordinary level. The ancient Egyptians were in the habit of closing up the dams after the full rise, so as to retain the water on the fields, and thus secure a fuller deposit of mud, as well as a longer continuance of the fertilizing element. The White Nile sends down the largest amount of water for the inundation, but it is the Blue Nile which supplies the most important material for the alluvial deposit, and which is of such value to crops. It is this deposit which has been slowly raising the level of the surface of Egypt—a rise which has been very exactly determined in late years. It was first observed in the case of the Memnon statues and in the obelisk which still stands at Heliopolis—the base of these monuments, remaining as fixed points, were clear evidences of the rise of the soil. Sir Gardner Wilkinson puts it that at Elephantine the rise has been nine feet and at Thebes seven feet in 1,700 years, or about four inches in a century. There have been many learned efforts to show that this increased elevation has led to a decrease in the height of the inundations, but the authority above referred to gives it as his opinion that the rise of the Nile is now the same as in former times.

The height of the inundation was of the greatest importance to the people of Egypt at all times, because an extra high rise was equally disastrous with a deficient one. Pliny states that "a proper inundation is sixteen cubits, * * * in twelve cubits the country suffers from famine, and feels a deficiency even in thirteen, fourteen causes joy, fifteen security, sixteen delight." The rise is not the same at all parts. In the confined space of the Nile Valley above Cairo the height must be greater than in the Delta, where the surface widens out and the channels are numerous. According to Herodotus a rise of eight cubits was considered a sufficient height for the irrigation of Egypt in the time of Mœris, and this forms one of the grounds on which it has been urged that the elevation of the land has changed the conditions of the yearly inundation. At the present day a rise of eighteen feet at Cairo is looked upon as approaching a famine year. Up to twenty-seven feet is good, and no bad effects result; but above that height it becomes a flood and does damages by carrying away the dykes and other works connected with irrigation. In addition to the ruin of crops a high inundation has a tendency to produce disease, not only among the inhabitants, but among their flocks as well. The rise of the river was carefully watched, and the guardians of the Nilometres announced the height daily. There were Nilometres at various places. The one best known to those who visit Egypt at the present day is at Rhoda, near Cairo. The daily proclamation of the rise was to prepare the people for the proper time to open the canals.

When this had been done and all the country was under water, as all occupations were suspended and none of the works of husbandry could be performed, the ancient Egyptians betook themselves to amusements. They had games and gymnastic exercises, wrestling matches and bull fights, to which were added a plentiful supply of eating and drinking. In this way they passed their time till the waters subsided.

A correspondent of the New York *Times* writes: It may interest your readers to be reminded that Admiral Hewett, R.N.V.C., commanding at Suez, was the Commander of her Majesty's ship "Gladiator," which brought back to New Orleans from Truxville, Honduras, and Ruatan Island, the remnant of William Walker's last filibustering expedition in September, 1860. The return for his kindness was a villainous assault on him at the St. Charles Hotel by a mob of well-dressed specimens of chivalry. He is a splendid officer, and gained the Victoria Cross while a midshipman in Peel's Naval Brigade before Sebastopol.

ABOUKIR.

On two occasions in modern warfare Aboukir has been rendered famous and historical. It is probable that before many days have passed away Aboukir will be famous and historical yet a third time. Following the railway line which skirts the Mediterranean shore from Alexandria the traveller proceeds through Ramleh and thence past several insignificant fishing villages, the chief of which is El Mandara, until he reaches the point of Aboukir, at a distance of between thirteen and fourteen miles, from what was once the Grande Place of Alexandria. Close to the promontory stands the village of Aboukir, and not far from that somewhat squalid spot of habitation the inquisitive traveller may find the ruins of the ancient Canopus, though few strangers ever take the trouble to find these, notwithstanding that once upon a time they formed a conspicuous feature of the former Delta. From the promontory of Aboukir the bay of the same name stretches in a north-easterly semicircle, and terminates in a sharp horn at the Rosetta mouth of the Nile. The bay is not a pleasant place nowadays for the navigators of big ships. Its waters are clear and blue, and in the more open portions of the bay contain a depth varying from six to eight fathoms; but here and there are treacherous shoals which, to avoid, require the mariner's greatest skill and caution. Running in shore, not far from the village of Aboukir, there is a formidable sandbank; then, again, there is a reef of rocks known as the Culloden reef, and the next obstacle is an island, sometimes called Aboukir Island and sometimes Nelson's Island. This island is now strongly fortified, and at intervals around the circumference of the bay there is a line of four forts, and doubtless several earthworks, which Arabi Bey's men have had time to erect before and since the evacuation of Alexandria.

It was in 1798 that the British fleet set out to look for Napoleon Bonaparte. Lord Nelson, then Sir Horatio, hoisted his flag in the "Vanguard," seventy-four guns, and was despatched by Lord Vincent from Gibraltar to Toulon, where Napoleon was believed to be fitting out his expedition for Egypt. On the way the "Vanguard" was disabled in a gale; bad weather continued, and Rear Admiral Brueys was enabled to escape successfully from Toulon, together with Napoleon and his troops. Nelson set off in chase along the Mediterranean, accompanied by the ships "Culloden," "Goliath," "Minotaur," "Defence," "Bellerophon," "Majestic," "Zealous," "Swiftsure," "Alexander," "Orion," "Theseus," "Audacious" and "Leander," all 74-gunners. The chase was a long one, but on the 1st August, 1798, the English Admiral came up with his French antagonist at Aboukir, though not in time to prevent the landing of Napoleon with his troops close to Alexandria. Admiral Brueys was unable to enter the coveted harbor of Alexandria, so he brought his ships, consisting of one first class, three second class, nine 74-gunners and four frigates to an anchor in the Bay of Aboukir. Both fleets made ready for action, and at six o'clock on the night of the 12th of August there commenced in these same waters of Aboukir, which ere long will be resounding with British cannon, one of the most desperate battles known in the annals of modern warfare. By noon on the 13th the French fleet was badly crippled. One ship had blown up, eight had surrendered, two had set sail and bolted, and two were aground, one of which was immediately destroyed by fire by its own gallant crew. The ship blown up was the "Orient," and Brueys and many of his officers were hurled into destruction with her timbers. The French Admiral, before his death, was wounded three times on the face from a langrage shot. Nelson himself received a severe wound. The British ship "Culloden" grounded near the island to which it has since given its name, close to Aboukir village. This was the celebrated Battle of the Nile, almost as celebrated in song as it was through its results. Aboukir, in but a few months after witnessing this sanguinary struggle in her bay, was destined to see another desperate battle fought in her vicinity on shore. Here on the 23d of July, 1799, Napoleon, fresh from his great victory over the Mamelukes at the Pyramids, encountered the Turkish army under Mustapha Pasha, who had 18,000 men under his command. The Turks (who were full of a righteous indignation and enthusiasm at Napoleon's audacious invasion of the territory of their sovereign, the Sultan) had entrenched themselves close upon the sea line of the bay. At one time during the battle Mustapha Pasha's force threatened to be successful. Full of confidence they sallied out of their entrenchments with so much impetuosity that they fell into disorder. This was the chance which the greatest tactician of the age desired. He rallied his men, drove back the promiscuous Turks in front of a wall of bayonets, and let loose his cavalry (of which the Turks had none) among the scattered crowd. The result was that the Moslems were forced back into their entrenchments, where such a terrible slaughter ensued that many of the Turks desperately threw themselves into the bay and perished in a vain attempt to reach their ships, which were riding at anchor on the spot where in the previous year Nelson had destroyed the French fleet. The water was said to be covered with turbans and tinged with blood, and 10,000 men perished there at Aboukir either by the bayonet or the equally inexorable sea. The remainder of Mustapha Pasha's force surrendered. Thus was Napoleon avenged for the death of Admiral Brueys and the destruction of his celebrated fleet never to return. Shortly after this victory at Aboukir the French general escaped from Alexandria, evaded the English cruisers which had gone to Cyprus, where he was not, and arrived safely in the Gulf of Freyjus in the vicinity of Toulon.

What new scenes of bloodshed Aboukir is destined to witness it is impossible to say, but this is certain, that the arc of the bay is capable of making a vigorous defence for a time against the English fleet. The difficulties of navigating the deeper waters of the bay, the fact that the heavy armored British men-of-war will have to lie off at a greater distance than Nelson had with his "wooden walls", will all tell in favor of the defenders, though, of course, it cannot be overlooked that the English guns are infinitely more powerful than they were nearly a century ago. Had the Egyptians still possessed the Pharos battery, which commanded very effectually hostile vessels in the vicinity of the promontory of Aboukir, they would have had a better chance of galling the English fleet by a cross fire from the Castle, which stands on the edge of the promontory; but now that the Pharos battery is a wreck, and nothing more, they will have to rely upon the battery on Nelson's Island, the splendid fortifications on Aboukir Point and the equally formidable fortifications which encircle the bay as far north as Fort St. Julian. The batteries at Edku, in the vicinity of Rosetta, are believed to be exceptionally powerful, and it will be one of the first tasks of the British to silence the fortifications both at that point and the castle on the promontory.

INTERESTING JUDICIAL DECISION.—Two cases of great interest to breeders and auctioneers were tried on Wednesday, in the Malton County Court, England. The question was "Are auctioneers liable for the incorrect descriptions of animals which are sold by them?" This Judge Bedwell decided in the affirmative, declining to look upon such persons as agents for other parties merely. Auctioneers, his Honor said, were liable for everything beyond what he might consider a mere error of description. The case in dispute was one in which the auctioneer had stated that a cow which he was then selling would calve in March, whereas it did not calve till May 20th, His Honor gave a verdict for plaintiff for £1 10s. and costs. In a similar case, heard subsequently, he penalized the defendant in a sum of £3 10s. and costs,

ISMAILIA.

Ismailia, where the British troops under General Wolseley are at present concentrated, is a mushroom city. Like Jonah's gourd, it sprang up, comparatively speaking, in a night. When the canal was in course of construction M. De Lesseps saw the necessity of building a town about half way between Port Said and Suez. Such a town would be a basis for stores; it would supply the many thousands of workmen with water and other necessaries, and, moreover, it would be a place where the principal officials could reside and direct operations on every side. He chose a sand ridge opposite Lake Timsah for the site. Here and there grew a clump of date palms, but east and west there stretched the yellow desert, so bare, so monotonous, and so uninviting that no eye less sharp than that of the great engineer could have discovered the capabilities of the place as the site for a town. M. DeLesseps, however, saw its capabilities. With his customary energy he set his men upon the work. Streets and blocks were outlined upon the sand; stone from adjacent quarries was brought in abundance, and mortar was made upon the spot. In a few weeks a city had arisen, with houses, streets, avenues, palaces, public squares and a public garden. This wonderfully built town was named in honor of the late Khedive Ismail, and His Highness deigned to honor it with his presence, and built a stately pleasure house opposite the blue waters of Lake Timsah. Not far from this viceregal residence stood elegant chalets belonging to M. de Lesseps, Voisan Bey, the Director General of the works; M. Lavaleye, the contractor; M. Borel, a partner, and M. Dussand, the sub engineer af Ismailia. A palace was next erected for the accommodation of the Governor, and this building, rising square and flat-roofed from amid a pleasant garden of Eastern and Oriental flowers and shrubs, was a conspicuous object in the view of the traveller passing the canal on his way either to or from India. M. de Lesseps fed his magic city with a copious supply of water drawn from the Nile at Zagazig, and this source supplied not only his workmen but the thousands of shopkeepers and others who flocked from the Levant, Suez, Cairo and Alexandria into Ismailia. The water junction with Zagazig is named the Sweetwater Canal, and it is inferior in length and utility only to its great neighbor, the Maritime Canal. Ismailia, as arranged by M. de Lesseps, stands at the junction of three canals—namely, the Sweetwater Canal, from Zagazig to Ismailia; the Sweetwater Canal that runs southward from Ismailia to Suez; and, of course, the Suez Canal itself. The water of the Maritime Canal being pronounced fit neither for man nor beast, Ismailia is entirely dependent upon the Sweetwater supply from Zagazig. Cut that off and its inhabitants must either perish or escape to the banks of the Nile. Suez also would be imperilled, as it depends almost wholly upon the Sweetwater Canal from Ismailia, because that canal is in reality nothing more than a continuation of the canal between Ismailia and Zagazig. Suez has plenty of salt and brackish water in her vicinity, but she has no well supply of the element, and as rain visits her as seldom as it does Aden she has no reserve of drinking water stored in reservoirs or cisterns. It will be evident, therefore, at a glance that if Arabi Bey threatens the water supply of Ismailia, he will at the same time be threatening that of Suez. He will, in fact, be rendering both cities totally useless for occupation, either civil or military. The proudest day in the history of Ismailia was that on which, in November, 1869, the splendid fleet that celebrated the opening of the Suez Canal steamed into Lake Timsah, headed by the beflagged and bannered imperial yacht of France, the "Aigle," bearing on board the Empress Eugénie, and followed by the fifty steamers which bore the Austrian Emperor, the Prince Royal of Prussia, Prince Henry of Holland, and a host of ambassadors and brilliant personages of Europe. Then Ismailia wore her gala dress. The Khedive entertained his guests right royally in magnificent pavilions. Music and dancing sped the flying hours, and wine flowed like water. Then population flocked to her by hundreds daily, until within a few months from the day when her form was scratched upon the sands, she could count upon some 10,000 or 12,000 residents. But when the canal was completed and contractors had fled and the laborers had returned to their homes, Ismailia's glory began to fade. She was visited only occasionally by the Khedive, the ships bound east and west passed her disdainfully, and her population dwindled down to less than two thousand. Few travellers think of going to see Ismailia. The Governor lives there an easy life—or at least he did before Arabi Bey disturbed his soul—having few further cares beyond looking after the fresh water works, the ladies of his harem, his servants, and the Arabs who occasionally wander from the adjoining desert into the half-deserted bazaars. When the Hon. W. H. Seward was making his tour around the world in 1871 he visited Ismailia. He had heard of the way it had suddenly sprung up, of its unique beauty when compared with the forlorn desert, and of the splendors it put forth when the unfortunate ex Empress of the French was Ismail's honored guest in 1869. He was surprised to find Ismailia as it stood. Only a year and a half had passed away since that magnificent opening day, and how sadly had Ismailia changed! Her population had shrunk into small proportions; "the beautiful palace now knowing neither master nor guest, has already become monumental. The sirocco blows the sands of the desert on the paved streets and there are deither men nor money to clean the streets again. Contractors and laborers have disappeared, and no laborers have returned to take the place of those that left." As Ismailia appeared to the great American statesman in 1871 so it appears now to the casual traveller. Wretched as she is, if her fresh water canal, her sole source of beauty, is destroyed by the Egyptian troops she will become a wilderness and a desolation and her once resplendent Hotel des Voyageurs a woful mockery.

A MOHAMMEDAN ON THE WAR.

A farewell dinner was given in honor of the General at Allahabad by the North-West Club; the Chief Justice presided. In proposing the health of the native troops, Syed Mahmud, as representing Mohammedan opinions, spoke as follows: "Sir Robert Stuart and gentlemen: I trust I shall not be considered guilty of a breach of the rules that govern public dinners like the present if I rise at this late hour to propose 'The health of the Native Army.' I am sure our distinguished guest, General Macpherson, in whose honor we have assembled to night, and with whose illustrious services we are all acquainted, will be the first to agree with me when I say that in all campaigns connected with the interests of India, Her Majesty's native troops have proved an important element in achieving glory for the British standard. The late campaign in Afghanistan is still fresh in our minds; we still remember the sufferings and achievements of that campaign; we can still recall the great battles that were won, and the glory which they reflected upon the British arms. I cannot doubt that every British officer who commanded, and every British officer who fought in that campaign will allow that the native soldier who fought side by side with him was not found wanting in loyalty, in disciplined obedience, in power of endurance, and in bravery; and, gentlemen, because these are truths which are known best to the British officers who led their native soldiers into the battle field, because these are truths which must always be recognized in connection with the imperial power of England, because they are truths which inspire the native British subjects with pride, I am anxious to repeat them in an assembly of Englishmen. This is not an occasion when it would be appropriate to say anything which has even a semblance of being political; but, gentlemen, because I am a native of India, because I belong to a race which supplies England with her native armies, I trust you will forgive me if I speak with some feeling when I say that the imperialism of England and its martial power owe their magnificence in no small measure to the fact that India forms a part of the British Empire. While other continental powers boast of their tens of millions of subjects, England can look with pride and with satisfaction to the 300,000,000 who can supply her armies with hundreds of thousands of soldiers—soldiers who, under British discipline and the leadership of British Generals, can cope with any army in the world. I have always felt and I shall feel it to the end of my days, that the union of England and India must always be a source of power to the great Empire of Britain, that of that power both England and India have reason to be proud, and that in all the martial glory which the English and the native armies achieve, the glory of conquest and victory belongs not only to England but also to India. Gentlemen, the time is fast approaching, if it has not indeed already begun, when the distinctions of race and of creed will sink into insignificance in comparison with the stronger bonds of friendship and political union between England and India, when political power and martial glory will be shared more obviously by Englishmen and natives alike, when the civilized world will be convinced that India is neither a source of danger nor a point of weakness in the vast empire of Britain, when the native of India will be as proud of being a British subject as the native of Kent. Upon the present occasion I am convinced that I express the feelings of my countrymen when I say that we are proud to feel that the army which General Macpherson is going to command in Egypt will consist principally of natives of India. As a native of India, I can assure our distinguished guest that he may rely upon the loyalty and the devotion of his native soldiers. I can also assure him that he will carry with him the good wishes of the Indian population on whose behalf the expedition is undertaken. Whatever the political causes which brought about the disturbance in Egypt may have been, of one thing I am sure, that India cannot tolerate anything which proves a hinderance to free intercourse between England and India."

MR. HERBERT SPENCER.

HIS ARRIVAL IN NEW YORK—A SKETCH OF HIS CAREER.

The Cunard Steamship "Servia," which left Liverpool on the 12th instant, arrived in New York yesterday, having on board 457 cabin passengers, one of whom was Mr. Herbert Spencer, the distinguished English philosopher, who seeks the United States for the benefit of his health. For some time past his physical condition has been such as to cause much anxiety to his friends.

A reporter of the New York *World*, who had seen and conversed with Mr. Herbert Spencer in London in 1879 was present when he disembarked and observed his much altered appearance. He has aged very much during the last three years, though his wearied appearance may be due in some measure to the fatigues of his voyage; but his countenance lights up still when conversing. Mr. Spencer said, in reference to the object of his visit: "I have come to the United States for the benefit of my health and for nothing else; but it is not impossible that I may, on my return to England, record my impressions of this country and people. At present I have formed no such intention. Whatever pertains to the human race has, of course, its interest for me as a sociologist, and I do not expect to sojourn in this country for three months without meeting with material for copious notes. My stay in this country will not be prolonged beyond the three months' limit I have set myself, unless I should find that I derive great benefit from the change of climate."

During his stay in this country Mr. Spencer will be almost constantly attended by Professor Youmans, editor of *Appleton's Scientific Monthly*, and Mr. J. Fisk. He goes first to Newport and intends to visit Montreal before returning to Europe. Questioned on the oft-debated subject as to whether he educated the late George Eliot, Mr. Spencer said: "I have a life long acquaintance with that lady's works, but I was not personally acquainted with George Eliot befor the year 1881, a fact I deeply regret, as I have an unbounded admiration for her genius and character. I have no posthumous manuscript novel of hers in my possession nor is it at all in my power to publish her biography, a work which I leave to other hands better fitted for the task."

He left New York in company with Mr. Youmans, as the fatigues of the voyage prevented him from remaining to receive his many friends in this city.

Mr. Spencer, who is sixty-three years old, was born at Derby, England. His father was a tutor in humble circumstances, but celebrated for his mathematical knowledge. From his father and an uncle, the Rev. Thomas Spencer, he received the rudiments of a liberal education, and at an early age evinced extraordinary aptitude for the study of the exact sciences, making rapid progress in every branch of mathematics. He also showed a taste for the study of entomology, and when very young amused himself by collecting insects and watching their development. At the age of seventeen he entered the service of the London and Birmingham Railway Company as a civil engineer, but his opportunities for study being too limited while in this service to suit his aspirations, he resigned his position after having held it for two years. Retiring to his home, he devoted himself to study. It was at this time that he proposed certain improvements in the manufacture of watches, since generally adopted, a new form of printing press, a machine to make type by compression of the metal and the glyptographic process of engraving. In 1843 Mr. Spencer endeavored to obtain literary employment in London, but he signally failed to secure even minor journalistic work. In 1842 he had begun the publication in the *Nonconformist* of a series of papers since separately published under the title of "The Proper Sphere of Government." From 1848 to 1852 he contributed largely to the *Economist*, all his essays favoring the doctrine of evolution. Mr. Herbert Spencer's works are very voluminous. A few of the more important are "Social Statics" (1850), "Principles of Psychology" and "Railway Morals and Railway Policy" (1855), "Essays" (1857), "Education: Intellectual, Moral and Physical" (1860), "First Principles of a System of Philosophy" (1862), "Classification of the Sciences" and "Principles of Biology" (1864), "Spontaneous Generation" (1870), "The Study of Sociology" (1873), "Descriptive Sociology," (1874) and "Ceremonial Institutions" (1878). He also began in 1874 the publication of a quarterly journal entitled "The Principles of Sociology." As in the case of Carlyle, his works meet with a readier sale in America than in his native country.

By the death of a relative not long ago Mr. Spencer inherited a fortune sufficient to secure him independence for the remainder of his life. Mr. Spencer is unmarried, and when at home lives at Bayswater, in the western part of London. His health of late has prevented him from indulging in severe application, and he now seldom writes more than three hours daily. A few months ago he visited Egypt, but derived no benefit from the trip.

PAST MELANCHOLY EVENTS IN COREA

HATRED OF FOREIGNERS AND OF ALL WHO WOULD BE THEIR FRIENDS.

The conclusion of a treaty between the United States and Corea adds another to the peaceful successes of American diplomacy in the far East. Nearly 30 years ago the American Commodore Perry, overcoming obstacles which had baffled almost every European nation, had, without firing a shot or leaving ill-feeling behind, succeeded in opening Japan to foreign intercourse. Four years later Mr. Townsend Harris, the American envoy, from the seclusion of his legation at Shimoda, without the "moral" support of a single gunboat, negotiated the treaty with the Japanese which has been the model for all the treaties made up to the present moment with that people. Two years ago Commodore Schufelt, in the course of a cruise round the world in the United States war vessel "Ticonderoga," called into one of the Corean harbors with a letter for the King, expressing the desire of the President for a treaty of amity and commerce. Leaving this document, he departed as peacefully as he had arrived. When the Coreans had had ample time to digest his request and to consult their suzerain, the Emperor of China, the Commodore returned alone, and after a few months' stay in North China, is now on his way to the United States to obtain the ratification of a treaty in which the King of Corea expresses "his earnest desire to establish relations between the two countries on a permanent and friendly footing, and to facilitate commercial intercourse." The "solid substratum of force" on which a distinguished English diplomatist said our relations with Eastern countries must alone rest has been conspicuous all through the American officer's negotiations only by its absence.

The history of European intercourse with the inhabitants of the little peninsula in north-eastern China is brief and melancholy. The touching story of the crew of the Dutch vessel wrecked on the Island of Quelpaert in the middle of the seventeenth century, who were detained among the Coreans for more than 30 years, as told by their "Secretary," will be found in the pages of "Pinkerton," and need not be further referred to here. It was not until the treaty of Tien-tsin had opened North China and Manchuria to the zeal of Roman Catholic missionaries that Corea was again visited by Europeans. The Jesuit fathers seem to have made their way there about 1862-3. We have now only their own accounts of what took place. Their efforts to make converts were, they say, crowned with success for a few years. But in 1865 commenced a persecution unparalleled even in the frightful annals of religious persecution in the East. It is said that 150,000 Coreans, men, women and children, lost their lives on this occasion. Of the French priests four alone escaped in disguise and, assisted by some of the faithful of their flock, an attempt was made by the French fleet in the China seas to take vengeance for this slaughter, but it was unsuccessful. Until the history of modern Corea is studied by our scholars in the native works themselves, we cannot correctly ascertain the cause of this persecution. Meantime, the student of the history of other Oriental nations who finds analogous events will probably look for analogous causes.

The subsequent attempts of the Jesuits to cross the Corean frontier, and the success that attended them, will be found recorded in the annals of "Missions Etrangères." Mgr. Ridel, who evaded the frontier guards and entered the country in 1878, has left us an account of his adventures. He penetrated Corea, he tells us, in the hope of attaining the crown of martyrdom. In this he was disappointed, for he was promptly discovered and imprisoned, to be released a few months afterward at the intercession of the Governments of China and Japan. But tens of thousands of wretched Coreans, who were supposed to be tainted with Christianity, suffered death, many of them with the most horrible torture, because of this gentleman's ambition to be a martyr. An American naval expedition sent to punish an outrage on a ship which sailed up one of the Corean rivers met with little more success than its French predecessor. In 1868 a steamer manned by American and European filibusters, set out from Shanghai to rob the tombs of the Corean Kings, either for the sake of the gold coffins in which Mendez Pinto says they were inclosed, or because the Jesuits reported that the body of a dead King could be held for almost any ransom. In 1860 Ignatieff, then Russian representative at Pekin, taking advantage of the Chinese difficulties with England and France, obtained the cession of a vast tract of Corean territory lying in the Amour region.

These are a few of the salient points in the history of Corean intercourse with the civilized nations of the West, and it hardly seems a matter for great surprise that Corea should have preferred exclusion to more intercourse of this description. Nor is it difficult to believe the tales told by Japanese travellers of pillars erected over the whole country calling down a curse on the head of him who should first propose friendship with the hated foreigner. Political considerations have ultimately prevailed. Chinese and Japanese statesmen have long been persuaded that the only chance of preserving Corea from absorption into Russia and their own countries from a standing menace was to open it to foreign intercourse. Following their counsels, Corea has now entered the comity of nations. Commercial advantages she has few to offer. Her total trade with Japan during 1881, at the three opened ports, hardly exceeded a quarter of a million sterling. There is said to be much mineral wealth, but this must be mere surmise at present. Trade or no trade, it is to be hoped that the little kingdom which has just come among us will present an instance of at least one oriental nation with which England can continue to live without violence or bloodshed.

SIGHTS IN BELGIUM.

HARD LOT OF THE WOMEN AND THE DOGS.

(*Correspondence of Cincinnati Commercial.*)

And nobody in this region seems to work any but women and dogs. The "harvest hands," as they are called at home, were, with the fewest exceptions, women. They were working like oxen. In shape they are short and wide out. Centuries of carrying heavy burdens upon their heads and shoulders have stunted their height and broadened them out. This minute—5:30 in the morning—at Cologne, I hear the measured tramp of soldiers in the street outside. I look out. A squad of good-sized, well-formed young soldiers are passing with a lieutenant. They hold their heads up in a spirited way, and march along limber and elastic. Immediately behind them follow three tawny, squatty women, carrying upon their heads loads which look awful. It is enough to crush their skulls in, one would think. The picture tells the whole story of life among the lower classes in this country. It is a barbarism as complete as reigns among the Indian savages of America, where the squaws do the drudgery and the men fight and hunt. Men in uniform fairly swarm. They waddle about the country railway stations in caps green, white, red, blue, and black—fat, lazy-looking fellows—while out in the adjoining fields women lug and tug at the bundles of hay and grain, and bend their backs in the turnip fields, plying heavy hoes, horny-handed and stiff, with weary, weather beaten, seamed, stupid faces. It is not an agreeable sight or an encouraging one for the future progress of one of the most civilized nations in the world. Everywhere are soldiers, soldiers, soldiers, marching, drilling, or standing sentinel. I told you of those we saw before six o'clock this morning. At seven we went out to look at some sort of ancient rubbish and a splendid cavalry company passed us, full a hundred strong. Horse and rider seemed all one piece, and the animals' feet seemed to move by clock-work, so perfectly trained were they. It was a fine sight. But the most magnificently disciplined standing army in the world is maintained at a cost which cannot fail to tell on those people in the years to come. The men are drawn off to fight, and the women do the men's work. At this day in Germany women blacksmiths are not very uncommon. What is to become of the refinements of social life, the sweet sacredness of home? But I felt sorrier, if possible, for the poor little dogs than even for the women. They are not very big—no larger than the common despised "yellow dog" of America—yet two of them draw loads which seem heavy enough for a horse. The little things are harnessed underneath a sort of long, heavy barrow upon wheels; this holds the load. A man or woman holds the handles of the thing, and the dogs trot along beneath. Their ribs stick out, ill-padded with flesh, as though they were not well fed. Their panting sides, lolling tongues, and sorrowful, appealing eyes, would touch the heart of a stone. Everything hereabouts, too, seems done by sheer brute strength. There is no saving of labor, either by machinery or by the application of common sense. In the field we saw no American agricultural machinery, as in England and Scotland. Where in America a load of baggage, trunks, valises, and boxes, would be piled high upon a dray or great truck, and transferred at one gulp for short distances, here your porter takes it upon his head or arm, as the case may be, and lugs it off slowly and painfully, one piece at a time. We have had more fuss and trouble to keep from losing our baggage, coming from London to Cologne, than we should have had at home in going from New York to San Francisco and back again. Strange country this where women and dogs do the hard work, and where they have no checks for baggage. Stockings are knit by hand instead of by machinery, and in Antwerp and Brussels the women are so industrious that they knit running along the streets going of errands,

WARNING AGAINST BEER-DRINKING.

(*London Globe.*)

A few days ago was celebrated, in the town of Bernau, in Prussia, the anniversary of a famous victory won by the townsmen of that festive place in 1432. At that time the Hussites, under Koska, were besieging the town in force, and there was little hope of holding out against the determined fanatics. The siege was raised by means of a very curious stratagem devised by the burgomaster, who may be commended as having turned the appetites of the enemy into a more powerful weapon against them than any number of more deadly looking arms that could have been manufactured. It seems that the liking for beer was then as strongly developed among the people of the Fatherland as now, and the difference of creed between the attacking and defending armies did not imply any dissimilarity in their taste for the national bock. But there was this essential difference between the one and the other—that the besiegers had brought with them no brew-houses, or even any suitable caldrons for the making of their favorite drink, whereas the besieged were in full possession of everything that was required for that purpose. The burgomaster, accordingly, either gave orders, or at least made a suggestion, that every brewer in Bernau should at once set to and brew as much as he could of his best ale. Into the vats was then introduced a sufficient quantity of well disguised narcotic. The casks were packed for exportation, and despatched in a long train at night from the gates. They were naturally seized by the thirsty Hussites outside and their contents immediately distributed among the soldiery. The following day saw the latter all stretched in a more or less insensible condition on the ground, and an opportune sortie by the besieged ended in the death or capture of most of them and the flight of the rest. Koska was among the fugitives who escaped, but his saddle, which was left behind, was taken as a trophy, and still adorns the town hall of Bernau as one of its principal curiosities.

MR. SPURGEON AND THE POETS.—Mr. Spurgeon writes thus in the current number of his magazine:—"Our waste paper basket is always in full use, and it has a singular tendency to devour rhymes which writers call 'stanzas.' Poetical effusions are for the most part prosy delusions. Good poetry charms us, but limping verses worry us, *and we are often worried*. Let true poets sing all day and all night, but let pretenders hush. How glad we should be if this paragraph should wean some minor poet from rhyming, and inspire him with love to his drapery, grocery, carpentery or bakery! The retail trade is far more useful than wholesale poetising. Guessing at the dates of prophecy, and making poor verses, are two of those unprofitable devices which we rank with getting blood out of gate-posts and extracting sugar from bitter aloes. We mean this scrap to act as a warning. TRESPASSERS BEWARE! A WASTE BASKET IS KEPT ON THESE PREMISES.

QUESTIONS & ANSWERS.

[We invite questions on all possible subjects, to which we shall do our best to obtain correct answers. Correspondents are invited to send in replies to questions which are not satisfactorily answered].

THE WILLOW AS A TIMBER TREE.

SIR,—Would you or some of the readers of the *Witness* answer the following questions:

1. Where can I get the White Willow cutting spoken of in the article in the *Weekly Witness* of May 31st?
2. Where can I get the Osier Willow and the best kind?
3. How much will they cost a thousand?
4. The best way to prepare the ground? The ground I have in view is low and grown over with wild willows. T. H.

Hilly Grove, Manitoulin Island, Ont.

The White Willow was very popular for hedges some years ago, but appears to have gone into disuse, as it could not be kept within bounds. I can find no late nursery catalogue having it for sale. The Bloomington nurseries, Bloomington, Illinois, in their catalogue for 1877 advertise it at $10 per 1,000, one to three feet high. The Osier Willow can be got from most nurseries, tied up in bundles at from one to one and a half cents per pound. It will not pay to plant in low ground overgrown with wild willow till these are thoroughly extirpated and the land in good cultivation, when the cuttings about ten inches long can be planted in rows four feet apart, and a foot apart in the row, to be kept thoroughly cultivated. If the land is too wet for cultivation the willows will be full of sapwood and brittle.

J. DOUGALL.

Windsor, Ont.

CANADIAN VOLUNTEERS — HACKETT'S DEATH.

SIR,—Please inform me through the columns of the *Witness* if Canadian volunteers are liable to be called out by the English Government for actual service abroad.

Also, what year was it that Hackett was shot at Montreal? SUBSCRIBER.

Ansonia, Conn., U. S.

The Canadian volunteers are not liable to be called out to fight England's battles abroad. Hackett was shot in Victoria square, Montreal, on July 12th, 1877.

PRAYER ON ENTERING CHURCH.

SIR,—J. F. wants to know a prayer on entering the English Church. Here it is: Lord, I am now in Thine house: assist me with Thy Holy Spirit, disposing my heart to seriousness, attention and devotion for the honor of Thy holy name and the benefit of my soul, through Jesus Christ our Lord. Amen.

WM RHODES.

Gowrie, Ont.

THE HEIGHT OF A MAST OR OBELISK.

SIR,—The answer to the second question of "Enquiring Subscriber" in Wednesday's paper is this: Take a straight rod of any length, say three feet, then place it upright in the ground, and measure the shadow of the obelisk and the shadow of the rod, and say, "As the shadow of the rod is to the height of the rod, so is the shadow of the obelisk to the height of the obelisk. E.

WITH AN INSTRUMENT.—Measure a horizontal distance from the foot of the mast, &c., and standing at its extremity measure the angle subtended by the distance line and a line joining the top of the object; then the distance multiplied by the tangent of the angle sought will give the height. Or by logarithms—log dist. plus log tang. angle, equal log of height.

2nd. WITHOUT THE USE OF AN INSTRUMENT.—Measure a horizontal distance as before; at one extremity erect a stake perpendicular to this distance line, which may easily be done by means of a plummet. At any distance between this stake and the base of the column fix another stake also perpendicular, ranging their tops in line with the top of the object to be measured. Then joining the top of the object and that of the middle stake respectively with the foot of the inner and outer stakes we get two similar triangles. Hence, as the distance between the two stakes is to the distance between the outer stake and the base of the object, so is the height of the inner stake to the height of the object. Or if H and H' represent the above heights and D and D' the above distances, then D : D' :: H : H'. FRS. FARRELL.

928 St. Catherine street, 16th Aug., '82.

A CHEAP DRINK.

SIR,—Put one quart of Indian corn into a two gallon stone jar, costing 4 cents, root ginger cut in small pieces, 5 cents; 1 pint good molasses, 9 cents; 2 gallons cold water. Total cost, 18c. This makes a good drink summer or winter, and will be ready for use in about two days, or if bottled well, sooner. When not using the corn, cover it with clear water to keep it from moulding. When a second brew is required, pour the water off, and add the same amount of molasses and water as above, omitting the ginger and corn, as the latter will last for months. A little ginger can be added when not strong enough, so that many gallons can be made for the price of the molasses, after the first time. A spoonful of the essence of spruce can be added if liked.

Montreal, Aug. 17th, 1882.

BEE-KEEPING.

(*Conducted by D. A. Jones, Beeton.*)

PERTINENT ENQUIRIES ABOUT THE HIVE.

SIR,—Would you please answer the following questions through the bee department of the *Witness* as soon as possible, and much oblige,

A READER OF THE BEE COLUMN.

What is the best substance for blocking up cracks and holes in the hive? Would putty offend the bees?

No; I use putty.

Does the Jones hive need a cloth or netting over the top of the frames between the top of the frames and cover?

Cloth, to prevent bees from fastening wax to top of hive.

I have one of this season's swarms, and the season being very backward they may not fill the hive. Ought I to put in the division board at the end of the frames they will have filled, or ought I to feed them so as to fill the hive?

Put in six or eight combs and division board at back of them. If you have eight combs well filled they will pass the winter all right.

How should the space between the division board and back of hive be covered?

Nothing is required to fill space there.

Should the bees be examined only in the middle of the day, or would early morning do as well?

Any time when they can fly and it is not too cold. In warm weather it would be best to do so about the middle of the day, when most of the colony is honey gathering.

EXTERMINATING BEE MOTHS.

The fumes of burning sulphur will destroy these larvæ, and, in order that their destruction may be more easily and thoroughly accomplished, empty combs and honey should be kept in a small, tight room, and stored in such a manner that the fumes can readily penetrate to every comb. The best manner of conducting the fumigation is to fill an old kettle half full of ashes, put in a shovelful of burning charcoal, then pour in one pound of sulphur for every one hundred cubic feet the room contains, and close the room for a day or two. If a bee-keeper will keep only Italians, in good, well-made, movable-comb hives, give them the proper care, examine his empty combs and honey often during warm weather, and fumigate them when necessary, he will find the much-talked-of bee moth and its larvæ among the least of his troubles.—*Rural Canadian.*

IMPROVED CATTLE CARS.

A train of cars, each fitted up with separate stalls for sixteen cattle, recently carried 160 head of cattle from Chicago to Boston in three and a half days, the shrinkage per head being only 21¾ pounds average, or about one-fourth of the usual loss. The stalls are provided with springs to prevent serious jarring, and with water and feed troughs. The saving in shrinkage under this humane system compensates, it is said, for the higher cost of carriage.

UTILIZING CROWS.— A Pennsylvania farmer has turned the crows to a good account. He makes them allies in his work. Writing to the *American Agriculturist*, he says: "For the past five seasons I have, just before I expected my corn to come up, sowed on the field about a quart of corn to each acre, and repeated the operation as often as as necessary, until the corn was so large that the crows could not pull it up. If the corn is soaked until tender, they prefer picking what they want to eat from the surface rather than to pull the young plants to get it. The cost of the corn thus sown, is but a trifle; as a result I have a great number of crows almost constantly on my corn-field, and after they have been satisfied with corn, they will still pick up all the insects, grubs and cut-worms they can find, *as a dessert.* In raising fifty acres of corn since adopting this plan, I have not lost a hundred stalks by crows and cut-worms combined."

HOW TO TRAIN TOMATO VINES.

In my experience and observation in the cultivation of the tomato plant I have never seen so profitable a way as is practised by my next neighbor. When his ground is made ready, he sets the plants in rows, about four feet apart and three feet in the row. When about a foot high, he places a stake, about six feet long, firmly driven into the ground, leaving about four and a half feet above ground. To these stakes the stalks are tied, pains being taken as the plants grow to have a crotch at or near the ground. As these two branches grow, he entwines them about the stake. When any branches start out from the main stalk, they are allowed to grow only a few inches long, then headed in by taking off the terminal buds. In that way many side branches are furnished for bearing.

When planted in this way, the plants are easily cultivated; light and air freely circulating in every part. The tomatoes, being thus favored, grow very large, and, being so far above the ground, are free from dirt and all washing and cleaning are avoided. They are ready for market when picked. Where there is not a suitable branch formed near the ground, one stalk is wound around the stake and does very well. When the stalks reach the top of the stake, they are not allowed to go higher. On plants set out in this climate about the last of April or first of May, the first ripe fruit appears about the middle of July, and growth of vine continues until frost kills the leaves—usually three months of ripening.

My neighbor tells me that in a good growing season he has picked from half a bushel to three pecks from each average stake, and no larger or smoother tomatoes than his appears in market. He also tells me that he would rather have the stalks taller than shorter. In this way of training the stalks the fruit is ripe two weeks earlier than by the low way of training. The object of this trimming is to induce growth of fruit, instead of unnecessary branches. When the stalks are in rapid growth, trimming is needed once in ten or twelve days. In this way he has raised at the rate of 1,200 or 1,500 bushels per acre.—*Country Gentleman.*

CARE OF TREES.

There are some seasons when to neglect a newly set tree for a single week will prove fatal. Persons of limited experience think if a tree be well set, and leaves out they have nothing more to do but to enjoy its growth. This is a mistake. Many trees die the first season they are set, after they are well leaved out, and perhaps made several inches' growth.

The sun in our latitude is so hot during the summer months that very large quantities of water are thrown off by the leaves of the trees and unless the roots are numerous enough, and are surrounded with sufficient moisture to supply the water as fast as it evaporates through the foliage, the leaves will lose their natural color, begin to wilt, and finally die.

A newly set tree has but a limited quantity of roots, and none of them penetrate the soil very deep. For this reason as soon as the leaves begin to grow the draught on the roots for water is such that the limited space they occupy is soon drained of all moisture. To guard against this, it is necessary to resort to artificial means to apply water in sufficient quantities to keep the earth around the roots continually moist. The more a tree grows, the more water will the roots be obliged to absorb to keep up the waste by the evaporation. In addition to the amount of water taken up by the tree, and evaporated through the leaves, there are always large quantities lost by evaporation directly from the soil. To prevent this, the soil, two feet beyond where the roots extend and up to within a few inches of the trunk, should be kept heavily mulched until the tree is well established.

When a tree is to be watered it should not be done by pouring a few quarts of water within a few inches of the trunk of the tree, but the ground should be well wet in a circle around the tree larger than the space occupied by the roots. If water be applied in this way, it is not necessary to water every day. Once a week is often enough, unless it be very dry.—*Massachusetts Ploughman.*

RAISING PLANTS WITHOUT EARTH.

To cultivate plants without earth had long been the dream of chemists; after years of patient study, the gardener of Vascœuil has discovered a means of giving continued life and nourishment to plants without their ever being brought in contact with the soil. All he does is to wrap the roots up in some moss to which he has imparted this life-giving power.

This "fertilizing moss" is not only capable of affording nourishment to all vegetable life, but will do so indefinitely.

Since November, 1880, the date at which his researches proved successful, he has constantly been testing his process, and has never found the least interruption in the vegetative functions of the plants subjected to its influence; on the contrary winter and spring plants have blossomed with a vigor he has never seen in his garden. With a shelter of a glass, hellebores taken up at the end of November and the middle of December have remained two and a half to three months in blossom. Other plants, primroses, daisies, violets, auriculas, have not only been in bloom for three months, but have thrown out new buds. At Vascœuil we saw plants loaded with blossoms which had been in the fertilizing moss for weeks. The public in Rouen and Paris have during the past year had frequent opportunities of beholding again and again the process in full operation in the exhibitions of flowers and vegetables which M. Dumesnil has given. The exhibitions have been arranged so as to give some idea of the useful and beautiful results of this new discovery, and also to afford an opportunity of following every stage of the vegetation of plants reared without earth.

During the two winters since M. Dumesnil perfected his discovery, he has had all all kinds of ordinary flowers blooming in baskets containing the fertilizing moss. On the occasion of any fête his tables have been covered with a profusion of spring flowers, and he has been able to decorate his rooms with a freedom impossible with plants growing in earth. Thus while nature outside lay frozen and dead, the interior of his house has been a blooming parterre.—*Good Works.*

EVAPORATING FRUIT.

The modern process of drying fruit quickly by means of a high degree of artificial heat, is a great improvement on the old slow method of exposure to the sun, air, and cooking stove. In the one item of cleanliness, the advantage is very great. It must be admitted that dried apples hung on strings in farmer's kitchens for weeks and months, coated with dust and traversed by innumerable flies, are not a very inviting article of food. Fruit that has been dried in the open air and to which all the particles of dirt that float in the atmosphere and insects of all kinds have had free access is not much better. The eggs of moths are often deposited in apples while drying and these hatch out into small grubs and worms. All these and other evils are avoided by the use of evaporators. This improved process is carried on extensively in establishments constructed for the purpose, where fruit is dried on an extensive scale. There are many such establishments in the United States, and they are beginning to find their way into this country. Small, portable evaporators are also in the market, suitable for those who have orchards large enough to yield a surplus of fruit for sale. They are specially adapted for drying peaches and apples. The fruit thus prepared is very salable. No family that has used it would think of returning to the use of fruit prepared by the old method. Evaporated apples when cooked can hardly be distinguished from the green fruit. We know whereof we affirm, having used them in our family with much satisfaction, for two winters. They cost but little more than green fruit by the barrel. There is no waste from rotting, and there is no time consumed in preparing them for the saucepan.—*Rural Canadian.*

A TRAVELLING DAIRY.

A travelling dairy is the latest phase of the art of good butter making. The Springfield "Republican" contains the following account of one:

An Irish agricultural paper gives an interesting account of a method adopted in that country to instruct the country folks in the best methods of butter making. A perambulating dairy makes the rounds of both Ireland and England. Its working is thus described: The staff consisted of a lecturer, dairyman and woman. The former was an Englishman, son of an extensive milk and butter merchant in London, with a long experience in butter-making, packing and selling. His story was well arranged and well told. The dairyman and woman were pure Hibernians, and just the very people for the work—neatness, order, cleanliness and methodical working personified. John in his neat white jacket, and Ellen, in her dainty holland dress, were fit to compare with the best of the best of their class—Saxon, or Norman, or Dane. The dairy was fitted with the Holstein churn and butter worker, and other appliances which the great dairy shows have made celebrated, the object of the dairy being to show the method of butter-making adopted by the best continental producers of that article. Thus equipped, the educational dairy commenced its tour by a journey to Dunsany Park in Meath. This is not much of a dairy country and the population is very scattered. Audiences, therefore, were small, but the lectures and working were much appreciated. The next trip of the dairy was to the Birmingham dairy show. Each day some sixteen gallons of cream was churned into delicious butter and sold at two shillings (forty-eight cents) per pound. On the last day the demand so far exceeded the supply that the butter was made up in quarter pound lots, no one being allowed to have more than a single pat.

The plan adopted for working the dairy was to show the whole process of butter-making from the cream to the package ready for sale. While the work was going on, the lecturer explained each stage, and gave proper reasons for the adoption of the reforms he had to recommend. As a rule, there were two churnings a day, at each of which about twelve or sixteen pounds of butter were made, rolled and packed in small baskets or boxes and sold on the spot. Cleanliness and system were the foundation on which his story was built. After the lecture, conversations and questions were invited about any part of the address or working not understood by the auditory. Very interesting were these conversations, and most curious were some of the questions. Suffice it to say, in conclusion, that the information collected made it apparent that this institution was very much needed in order to carry proper teaching into many dark places in the country.—*Christian Union.*

ABOUT BEING "HANDY."

E. E. REXFORD

It is very convenient in case of a break-down, on the farm, to have a man about who is "handy" with such tools as are necessary to make repairs. If no such person is at hand, in the emergency, the broken article must be taken to some shop, and there is considerable delay which could have been avoided if some one on the farm had the "knack" of using tools. Not only could delay be avoided, but considerable expense saved. The repair bills on farm machinery amount to quite a sum in the year, and much of the work could be done at home if the boys about the place were only encouraged to use tools, and try their hand at such jobs as are continually coming along. Of course very bungling jobs and perhaps entire failures would be the result of their experiments at first, but practice will lead to better work, and in a short time a boy who has any liking for such work, and most boys have, will become sufficiently skilful with such tools as should be found on every farm to do any ordinary work that needs doing.

Very often we need a carpenter at the time when no carpenter is to be procured. If the work is not what some men call "particular"—in other words, if it is something that does not require the attention of a skilful mechanic—set the boys at it. Give them saws and planes, hammers and nails, and tell them to see how good a job they can do. If you can offer advice, do so. If you know what you want, and how to do it, explain it to them, and when they have got the idea let them work it out as best they can. When the job is completed look it over, and give them credit for everything that deserves it. In all unsatisfactory portions of the work show them what the failure consists in. By letting them practice in this way for a short time you can tell who is likely to prove handiest in the use of tools, and that one can be encouraged to apply himself, and soon you will have a mechanic on the farm. It is well for every boy to grow up with a familiarity with such work. There are scores of little breakdowns which call for some knowledge of this kind, and it is not always convenient to send to town or to employ a man to come and do the necessary work. If you have some one on the place who can do it you are independent of outside help.

Often these breakdowns accumulate. The waggon needs attention and the plough-handle is broken, the woodwork of the harrow is damaged, and the rake has met with an injury. Because it is not convenient to take the articles to town they are neglected until it comes to the time to use them again, and then they are found to be in no condition for use. If you were handy at tools you could avoid all this vexatious delay, if, when an accident occurred, you would fall at it, and repair the damage done. You would see what a fine thing it is to be "handy."

Most boys like to work with such tools as will be found necessary in making needful repairs on farm machinery. Some will seem to handle them at once, and others will be awkward in the use of them. But not one boy in ten will fail, with sufficient practice, in becoming sufficiently skilful to do all the work it will be found necessary to do on the farm. Give them the tools and set them to work. It will be a good investment—for them and for yourself.—*Christian Union.*

MILK DIET IN BRIGHT'S DISEASE.

Since we know not at present any drug that possesses therapeutic value to any marked extent in this terrible and fatal disease, and since it is daily making sad havoc among human beings, and principally among that class who, by reason of their valuable public labors, are particularly necessary to the world, therefore it becomes a medical question of paramount interest that we should discover some potent method of combating this very prevalent disease. Some years since Carel first called attention to the treatment of Bright's disease by the use of a milk diet, and since then Duncan, as well as many other prominent physicians, have written on this subject. We have ourselves seen some remarkable results follow this treatment, while Dr. S. Weir Mitchell, of our city, is now quite an enthusiast on this subject. This method of treating a formidable disease has received sufficient distinguished endorsement to recommend it seriously to our notice. We would, therefore, ask all physicians who read this article to try this method of treatment, and to furnish us with their experience, which we will publish. The milk is used thoroughly skimmed and entirely freed from butter. To procure the best results it has been advised that the patient shall restrict himself absolutely to milk and continue the treatment for a long time. If it disagrees with the stomach (as it will in some cases), Dr. Mitchell advises that the patient be put to bed, and the treatment commenced with tablespoonful doses, to which lime water is added, until the stomach tolerates the milk, when from eight to ten pints daily should be taken, and absolutely nothing else. The sanction of such a distinguished physician as Dr. Mitchell forces us to seriously consider the merits of this treatment, and we trust to receive the experience of all readers of this journal who may have cases of Bright's disease to treat.—*Medical and Surgical Reporter.*

HOUGHTON FARM DAIRY.

The basement of a cottage situated on a bank near the cattle barn has been converted into a convenient Dairy, by building a one-story annex on the west side, the front of which, on the level of the foot of the bank, forms the entrance. As the plan and internal arrangements of the Dairy are entirely new, a detailed description is of interest. A view of the Cottage, with Dairy attached, is shown in figure 1. The Cold Room for setting milk is in the north end of the cottage basement. The ice box, 12 feet long, 3 feet wide, and 4 feet deep, is made with 4-inch posts, boarded on the inside with 1 by 6-inch boards, laid two inches apart (x, figure 3), to allow the air to come in contact with the galvanized iron lining that covers the sides. The bottom of the ice box, *f*, consists of a grating of oak plank. Underneath this is a sloping floor of inch boards, *g*, covered with sheet zinc to carry of the water from the melting ice to a pipe at one end which discharges into the drain. The circulation of air in the cold room is shown by the arrows in the sectional view of figure 3. The wall between the Wash Room, *c*, figure 2, and the cold room, *a*, is of brick, in two sections. The upper one, projecting into the cold room, rests on a beam 8 by 8 inches square, supported on columns at the height of 2 feet from the floor. The lower section of the wall is built from the floor on the wash room side, one foot back from the

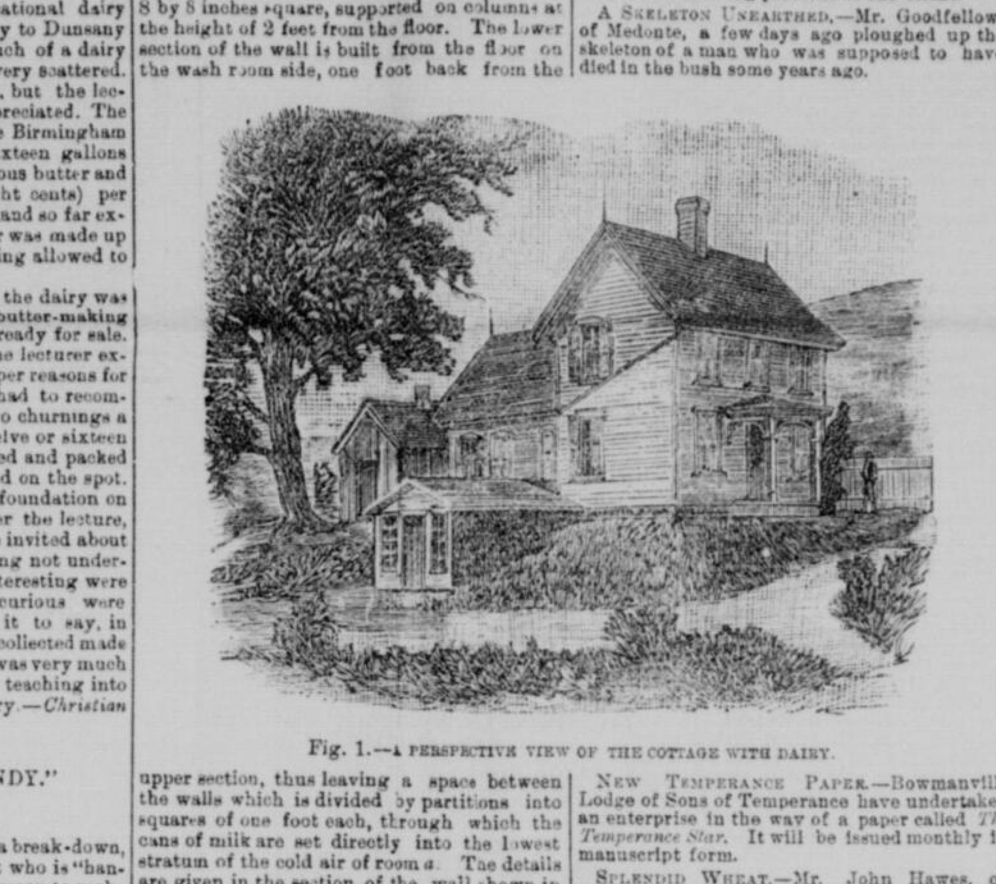

Fig. 1.—A PERSPECTIVE VIEW OF THE COTTAGE WITH DAIRY.

upper section, thus leaving a space between the walls which is divided by partitions into squares of one foot each, through which the cans of milk are set directly into the lowest stratum of the cold air of room *a*. The details are given in the section of the wall shown in figure 3. C is the cover of one compartment consisting of an inch board 12 inches square, with a hole in the center to receive the ventilating tube of the milk can, *e*. A lid, *b*, is hinged to a truss beam supporting the back wall, covering several of the spaces for setting milk cans. When *b* is turned up, it is fastened to the button, *i*. There is an air space, *s*, between the two covers communicating with the Churning Room by an inch glazed pipe at one end, and with the wash room by a similar pipe at the other end, as shown on ground plan, figure 2. The door between the wash room and churning room and the double doors between the churning room and cold room, *g*, are made as shown in figure 4. Above the door is a 4-inch opening closed by a valve that can be adjusted to regulate the passage of the warmer strato of rir from one room to another, while at the bottom of the door is a similar opening with a valve to regulate the passage of the lower or cooler stratum of air.

By means of these ventilators the temperature of the churning room can be readily controlled by admitting warm air from the wash room by the upper register to raise the tem-

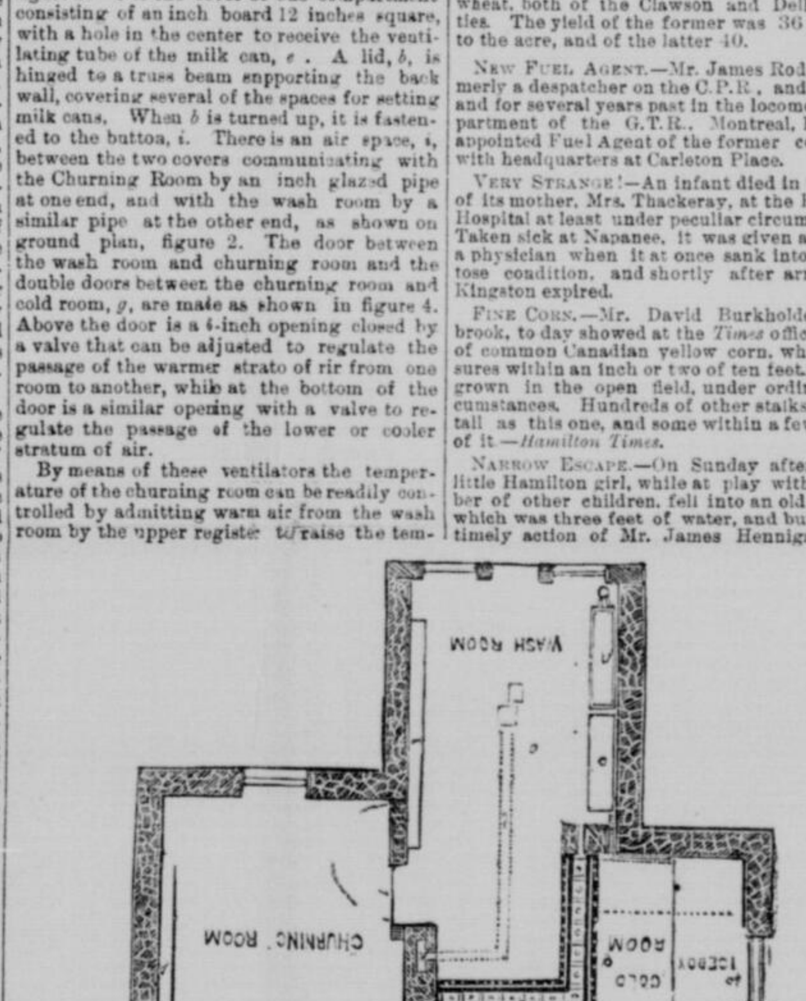

Fig. 2.—PLAN OF BASEMENT OF THE COTTAGE AND DAIRY.

perature, while the cooler air of the churning room passes through the lower valve of the wash room. To lower the temperature of the churning room, the ventilators opening into the cold room are used in a similar manner. In the wash room the stove, with boiler of hot water, is in the middle of the room; the pipe, *l*, is connected with the flue in the chimney at *k*. The sink, *n*, is used for washing utensils, the water being discharged by a pipe into the drain, *r*. As *o* is a table, and *p, p, p,* are ranges of shelves. The cold room, with its supply of ice, can be kept at a temperature of 40° to 45°, where the milk is set, while the churning room can be kept at 60° to 65°, or the proper temperature for churning. In the ceiling of the wash room there is a ventilator, one foot square the outlet of which is shown on the roof in the elevation, figure 1. The milk when brought from the barn, is taken to the wash room and immediately placed in the cold room by means of the lid in the partition

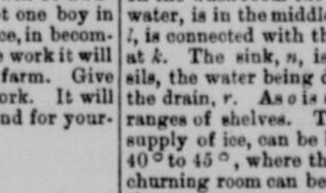

Fig. 3.—SECTION OF ICE BOX AND COOL ROOM.

wall, without opening the door to allow the cold air to escape. The cream rises in 12 to 18 hours, and the cans may be taken up through the opening and carried to the churning room without opening the cold room, or if more room is needed, they may be set back on the floor of the cold room, and other cans may be put in from the wash room. In the inner door of the cold room, figure 4, is a light of glass, with a shelf on the outside, on which a lamp may be placed to throw light in the cold-room whenever any work is to be done there.—*American Agriculturist.*

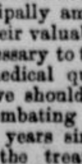

FIG 4.

THE SABBATH RE-ESTABLISHED.—A new Sunday law has been approved in the Canton of Zurich, Switzerland. It forbids labor which requires noise and general bustle. It gives to employees a right to the rest of the Sabbath. All shops must be closed during divine service, and all amusements are to be conducted so as not to interfere with the quiet observance of the day.

MR. GEORGE MULLER, of Bristol, owing to failing health, has had to abandon an intended visit to America.

CANADIAN NEWS.

ONTARIO.

PICKERING is making an effort to obtain a new foundry.

LINDSAY pays $2,000 a year for preserving law and order in her midst.

TALL RYE.—Charles McGregor, of Cramahe township, has rye 7 feet 8 inches high.

THE PROVINCIAL EXHIBITION at Kingston promises to be a great success. Many entries have already been made.

FOUR NEW ENGINES arrived for the Midland Railway last week, thus making a total of forty-one locomotives now belonging to that road.

RAPIDLY INCREASING.—Mr. Smith Hinman, of Cramahe township, has a Berkshire pig that is gaining one and a half pounds per day regularly.

NEW RAILWAY COACH.—A handsome new passenger coach is being built at the Uxbridge Car Works for the Victoria branch of the Midland.

A LIGHT ON THE SUBJECT.—Colborne village, with a population of about one thousand, is talking of putting in machinery to supply the village with gas.

NOTHING GAINED.—Kingston & Pembroke Railway laborers struck for $1.25 per day, but returned to work for 15 cents per day less than they were receiving previous to the strike.

A SKELETON UNEARTHED.—Mr. Goodfellow, of Medonte, a few days ago ploughed up the skeleton of a man who was supposed to have died in the bush some years ago.

NEW TEMPERANCE PAPER.—Bowmanville Lodge of Sons of Temperance have undertaken an enterprise in the way of a paper called *The Temperance Star.* It will be issued monthly in manuscript form.

SPLENDID WHEAT.—Mr. John Hawes, of Guelph township, has a very fine sample of wheat, both of the Clawson and Delhi varieties. The yield of the former was 36 bushels to the acre, and of the latter 40.

NEW FUEL AGENT.—Mr. James Rodger, formerly a despatcher on the C.P.R., and of late and for several years past in the locomotive department of the G.T.R., Montreal, has been appointed Fuel Agent of the former company, with headquarters at Carleton Place.

VERY STRANGE!—An infant died in the arms of its mother, Mrs. Thackeray, at the Kingston Hospital at least under peculiar circumstances. Taken sick at Napanee, it was given a dose by a physician when it at once sank into a comatose condition, and shortly after arriving at Kingston expired.

FINE CORN.—Mr. David Burkholder, Binbrook, to day showed at the *Times* office a stalk of common Canadian yellow corn, which measures within an inch or two of ten feet. It was grown in the open field, under ordinary circumstances. Hundreds of other stalks were as tall as this one, and some within a few inches of it.—*Hamilton Times.*

NARROW ESCAPE.—On Sunday afternoon a little Hamilton girl, while at play with a number of other children, fell into an old well in which was three feet of water, and but for the timely action of Mr. James Hennigan, who descended and brought her up, she would undoubtedly have been drowned.

QUICK WORK.—On Saturday afternoon Mr. F. Rowlin and five of his men slaughtered a car load of seventy-two fat hogs in five hours and fifteen minutes. The water was heated by one furnace, and the hogs delivered to the pork-house on the same afternoon. Mr. Rowlin wants to know who can beat this.—*Hamilton Times.*

PRESENTATION OF ADDRESS.—Donald Cattanach, Esq., J.P., of Laggan, one of the oldest and most respected pioneers of that locality, was recently presented by his friends and neighbors with a most feeling address, on the occasion of his leaving for Winnipeg, where most of his family are settled. Mr. Cattanach has been a resident of Laggan for the past 50 years and his earnest Christian counsel and sympathizing kindness will be much missed.

MARITIME PROVINCES.

SPLENDID CROPS are reported from the upper St. John, N.B.

OVER $100,000 PER MONTH, says the *Transcript*, is paid in wages to the employees of the Intercolonial Railway.

BARN DESTROYED.—A barn at Millerton, Miramichi (N.B.) was struck by what is described as a waterspout, last Sunday, and completely wrecked, and some boards were torn off another barn.

NEW PAPER.—Pictou, N.S., is going to have a new paper, to be called the *Pictou News.* It will be Liberal in politics. Mr. Charles D. McDonald is the editor, and Mr. Wm. Harris, the publisher.

PRESENTATION.—The other evening Mr. M.J. McLaughlin, of Fredericton, N.B., was presented with a handsome gold watch and chain, accompanied by an address as an expression of his friends' admiration of his skill in cricket and curling.

STATISTICAL.—In the township of Guysborough, N.S., there are 440 inhabitants, comprising 88 families. There are 30 families with only three persons in each family. There are twenty persons 70 to 90 years of age and there are twenty persons 60 to 70 years of age.

SALMON FOR ST. PAUL.—A carload of salmon, valued at $3,500, from Bathurst, passed passed through St. John the other day to the West side, where it was placed in a Diamond Refrigerator car on the St. John & Maine Railway for shipment West.—*Moncton (N.B.) Transcript.*

LARGE RHUBARB.—There is on exhibition in Messrs. Taylor & Dockrill's store some very fine specimens of rhubarb. It measures nine inches around and was grown by Mr. M. D. Farrell, of Dartmouth, N.S. The plant was brought from Ireland some years ago and is known as the Irish Mammoth.—*St. John (N. B.) Telegraph.*

ACCIDENT IN LUMBER MILL.—While mending machinery in Jewett's mill, Milledgeville, N.B., on Saturday, William Brittain, millwright, had his clothing caught by a shaft, and in an instant found himself revolving at the rate of two hundred times a minute. Brittain had strength enough to throw the belt driving the shaft off on the "loose pulley," and thus saved his life. His right arm is terribly mangled, and he is a mass of wounds and bruises from head to foot, but his injuries are not thought serious.

MANITOBA AND THE NORTH-WEST.

SNEAK THIEVES appear to be rather numerous in Winnipeg.

NEW HOTEL.—Portage la Prairie is to have a new $25,000 hotel.

RAPID CITY has a money order department in connection with its post-office.

WHEAT in the vicinity of Emerson will, it is estimated, average thirty bushels to the acre.

AN AGRICULTURAL SOCIETY has been organized by the farmers of the electoral division of Turtle Mountain.

TRADESMEN NEEDED.—Gladstone wants a barber, a tailor, a watchmaker, a shoemaker and several other tradesmen.

SUNDAY WORK on the C.P.R. continues to give great annoyance to the law-abiding residents of Portage la Prairie.

A LARGE STATION is being erected two miles and a half west of Garfield on the Air Line. The town is to be called Marquette.

THE LUMBER TRADE.—Carney & Watson, of Emerson, have received 280 carloads of lumber since March, and have paid over $5,000 for freight alone.

THE C.P.R. WEST.—Broadview, the point to which trains will run on and after Monday on the C.P.R. west, is 116 miles beyond Brandon, and 248 from Winnipeg.

MORE LAND COMPANIES.—Two more North-West land companies have been incorporated. They are respectively called the Highwood Ranche Company and the Wentworth Land Company.

AURORA BOREALIS.—The other night between nine and ten o'clock there was a magnificent auroral display at Winnipeg, spanning the heavens from south east to north-west, having the appearance of a lunar rainbow.

BOOM IN BRICKS.—Brickmaking is now being carried on extensively at East Selkirk. Messrs. Chambers and Wylie are burning a large kiln, and Messrs. Taylor and the C.P.R. yard will have kilns ready in a few days.—*Selkirk Herald.*

THE MOUNTED POLICE.—It has been definitely decided to establish the Mounted Police headquarters at Pile Bone Creek. This is a most suitable spot, centrally situated, being about eighty miles south-west of Qu'Appelle and on the line of the Canadian Pacific Railway. The change of headquarters will probably be accompanied by a reorganization on the force.

MEAT FOR THE C.P.R.—The Cochrane Ranche Company, of Bow River, have contracted to supply the Canadian Pacific Railway Company with 500 pounds of fresh meat daily at 7½c per lb. They have now 10,000 head of cattle on their ranche. Men working on the C.P.R are fed on fresh beef, and little or no pork is used. This is a great improvement on last spring.

THE CONTRACT FOR GRADING the Selkirk branch of the C. P. R. on the west side of the Red River was let to John A. Howell & Co. The work is to be proceeded with immediately, and to be completed this fall, about November 1st. The line will run through Kildonan, St Paul's and St. Andrews to the town of Selkirk, and will be twenty-two miles in length.—*Winnipeg Sun.*

QUEBEC.

TWO NEW PALACE CARS of Mr. Davis' patent have been ordered at Quebec for the Australian Government, to be ready in three months.

GOOD PRICES.—The cheese from MacFarlane's factory, at North Sutton, has been contracted at 11½ cents per lb for August and 12 cents per lb for the remainder of the season.

OLD LANDMARKS GONE.—Mr. Luman Horn, sen., and Mr. Samuel Aiken, two of Glen Sutton's pioneer citizens, died last week, the former aged 81 and the latter over 70 years.

A SAVAGE BULL.—Mr. Ogden Sweet, of North Sutton, had a valuable yearling colt killed and torn into pieces by a four year old Durham bull. The animal was supposed to be harmless until this.

NEARLY FATAL.—An accident occurred at the quarry at Abbotsford which narrowly missed a fatal result. An exceptionally large block was being lifted out of its place when one of the hooks or "dogs" gave way, and in recoil struck one of the men on the side of the face, knocking him senseless.

A HALE OLD MAN.—Last week an old gentleman named Gervais, aged 94, walked from Farnham to St. Angele, a distance of 14 miles. His sight and hearing are remarkably good for one of his age; and judging by the elasticity of his step, his physical strength is remarkable for one of his age.—*Cowansville Observer.*

RELIGIOUS NEWS.

PROMOTING HEATHENISM.—The Buddhists of Japan are translating and circulating Ingersoll's lectures, so as to try to counteract the teachings of the Christian missionaries.

JAPAN AND THE SCRIPTURES.—The government daily paper of Tokio, Japan, consents to insert an advertisement of the Scriptures, which is regarded by the missionaries as an important concession.

JUVENILE SMOKING.—The committee of the English Sunday-school Union offer two prizes, one of £10 and the other of £5, for the best two papers which shall set forth to the young the disadvantages, the evil effects and the undesirability of their indulgence in the habit of smoking.

VALUABLE TABLETS.—The British Museum has secured about 300 tablets and inscriptions from Babylon and vicinity. Among them are tablets with a hymn on the occasion of Cyrus' entry into Babylon, an account of the Deluge, and the history of Babylon in a fragmentary condition from about the 14th to the 9th century B. C.

NEW TEMPLES.—Chaplain Crawford of the United States Navy writes to *Zion's Herald* that in visiting Kioto, he saw in process of construction one of the grandest Buddhist temples in Japan, while near it was another, the most beautiful sacred edifice he ever entered. While in that country he has seen a large number of new temples in various stages of completion, showing that Buddhism is now enjoying a revival.

AMONG THE KABYLES.—Mr. George Pearse, English missionary in Algiers, writes to the London *Christian*, that Mons. Mayor, a young French missionary, has begun his labors among the native Kabyles, the ancient race who have not had the gospel since the time of St. Augustine. The gospel of Matthew is already translated, and he is at work on John. He is the only missionary to the natives of the North Coast of Africa, excepting these at Alexandria.

SOME OF THE brightest illustrations of Christian heroism are to be found among those who have but recently come out of the darkness of heathenism. When certain converts at Raiatea offered to enter the newly-opened mission field in New Guinea, their friends endeavored to dissuade them, saying, "There are serpents there; there are wild beasts there; and there is pestilence there." "Are there men there?" was their answer. "If there are men there, we will go."

FIRST CONVENT AT UGANDA.—Says the *Missionary Herald*, the glad message has come that after these years of labor at Mtesa's capital, one young native has given evidence of renewal by the Spirit of God. Nearly a year ago Duta and another lad were banished to an island on Lake Victoria Nyanza, by order of King Mtesa, because they had affirmed that the pagan religions were lies, and that Christianity was true. They were afterward released, and Duta was allowed to accompany Mr. Pearson to Zanzibar. There he was baptized, and in writing to Mr. Pearson, now in England, he says: "Now I know that sin is a great matter in God's sight. I have been baptized in the name of the Father, Son and Holy Ghost. I believe entirely that Jesus Christ is the Son of God, and He is God. I am writing to you on purpose that you may know that the boy whom you brought here now believes."

THE AMERICAN BOARD has now in its several mission fields nearly one hundred unmarried female missionaries, a class of helpers which has been greatly enlarged within recent years. A few of these women are engaged in medical work, others in directly evangelistic labors among their own sex, but the majority find full occupation for all their energies in the Christian schools which are proving such an efficient aid in reaching the people and developing a native agency. None of these unmarried ladies go out as nurses or governesses in the homes of others, whether of missionaries or natives. However helpful such services might be, they are called to other duties, save in special emergencies. As a class they are doing a work of inestimable value among the people to whom they go.

NEW GUINEA.—The progress of the gospel in New Guinea within the past ten years, has been very marked. Port Moresby was discovered only ten years ago, though the natives of the whole island were before that well known for their treacherous and murderous propensities, but Port Moresby is now a centre of Christian influence, a church of seven members having been formed last year, to which number twenty were added last New Year's day. Rev. Mr. Laws, in the *London Chronicle*, says that the new church building erected by the natives, though unknown to any order of English ecclesiastical architecture, is often filled with a good congregation. Many of the children can read and sing sweetly. He speaks of the public prayers of the natives as forming a most impressive feature of the work. The aptness of their language and the absence of formal phrases is very striking. The little girls even sometimes conduct family prayers with much simplicity and devotion. There are now in New Guinea six principal stations, with as many native teachers. With the clearing of the bush the climate seems to have become more healthy. It was in New Guinea, at Kalo, about fifty miles from Port Moresby, that the sad massacre of ten native members of the mission took place in March of last year. It is believed that the action of the British man-of-war in inflicting punishment upon the leaders of the attacking party has been productive of good. The people recognize the justice of the punishment, and so far from being frightened away from the missionaries by the transaction, they seem to trust more firmly all their promises. Eleven chiefs were present at a religious service at Port Moresby on New Year's day, and each one said a few words. Seven years ago many of them would not have dared to enter the town. Whatever may be said of them, they are no longer pirates and murderers.

THE HEBREW-CHRISTIAN MISSION.

Not long ago I attended the service at Trinity Church. The passage of Scripture read contained the account of the Burning Bush. I had just been reading the reports of the troubles in Egypt, and meditating whether they would not result in such an ascendency of British power in the East that Palestine would soon be re-opened to the Jewish race. The passage read in church recalled to my mind the use which Keble makes of the image of "the bush which burned with fire and was not consumed;" in the poem for the Fifth Sunday in Lent he compared the long persecuted, yet still surviving, people of Israel to the bush of this vision, or rather to brands from it, unconsumed and unconsumable;

> "Caught from that blaze by wrath divine,
> Lost branches of the once loved vine,
> Now withered, spent and sere,
> See Israel's sons like glowing brands,
> Tossed wildly o'er a thousand lands
> For twice a thousand years."
>
> God will not quench nor slay them quite,
> But lifts them like a beacon-light
> The apostate church to scare,
> Or like pale ghosts that darkling roam,
> Hovering around their ancient home
> But find no refuge there!"

Everybody has noticed that when a subject has been brought forcibly to the mind by any incident, a series of other occurrences generally follow all striking the same note. The next book you pick up, the friend who comes to see you, the first store you enter, are sure to present something which carries you further on in the same train of thought. Having often before observed these curious, perhaps providential, coincidences, I was not surprised when on picking up the "Herald" to look at the notices of religious services for the afternoon, the first one my eye rested on was headed "Hebrew-Christian Congregation." With a like-minded friend I made my way at four o'clock to the place where these services are held, and felt so well repaid for my visit that I determined through the columns of this paper to let others know of this work and its progress, and induce them to visit the chapel and encourage its earnest minister.

On the first day of this year the first service of this mission was held in Cooper Union. Several of the churches of the city have heretofore made efforts to approach the Jews individually and draw them into their various communions. The Episcopal Church has a mission for this purpose. But I am told that this Hebrew-Christian chapel is the first attempt in this city to draw together into one separate and organized body those who are Hebrew by race and Christian by belief. This plan seems to me a very wise one; and the failure to adopt it heretofore may be the cause of the ill-success which has accompanied the mission efforts made before this time. A single Hebrew received into one of our Christian churches must feel himself to some extent an alien, and be conscious of a great loneliness intensified by the scorn and contempt of his people. If some of those who have also adopted new views stood beside as sharers in the obloquy which falls upon him, and supporters in his isolation, his trials would doubtless be greatly lessened. At any rate it is worth trying. The sermon was upon the text, "He is altogether lovely." And was an earnest effort to convince the orthodox Jews who might be present that they would find their true King and the leader of their people in the greatest and noblest Jew of their race, he who belongs far more to them than to us, for "salvation is of the Jews." The Rev. Jacob Freshman, who has begun this work here, is the son of an orthodox Jewish Rabbi of Hungarian birth, who was converted to Christianity in Canada, and served until his death as an earnest and useful minister of the Canadian Methodist Church. His son who was at one time a bitter opponent of Christianity, has followed in his father's footsteps. After working faithfully for some years in Canada he has come by invitation to this city, highly recommended by those whom he has left, and earnestly approved by leading ministers here. The names of Howard Crosby and Charles F. Deems head the list of ministers who in a circular letter declare their "confidence that he is called of God to enter upon this important field."

The congregation was organized with ten members, all converts from Judaism; a few names have been added during the past six months, and it is hoped that others who are considering the question will be led to cast in their lot with the little band. Much suffering awaits those who do so. I was much interested in the remarks made by several members of the congregation at the close of the sermon. Two of the Hebrew Christians who spoke were evidently foreigners. The other seemed to be an American and quite young. He said that he had been converted to a firm belief in Christianity a few months ago at a meeting which he had accidentally attended in a little Bowery mission. He remarked that a Hebrew had lately said to him, "I have never yet seen a Jew turn Christian unless he had been paid for doing so." He said that this was certainly not his own case, since he had received nothing outwardly but trouble and loss from the change. A well-to-do father had cast him off with hatred and scorn, and he had a hard struggle to support himself and his young wife; but still he never for one moment regretted his change. We spoke with Mr. Freshman after the sermon, and asked him particularly about this young man. Mr. Freshman said that he knew the circumstances related to be strictly true, and that so far as human judgment could decide this young man's case was indeed that of one who had left all for Christ's sake.

The rent paid for this chapel is five hundred dollars yearly, and it is used only twice a week; at times when the church to which it is attached as a lecture-room has no occasion for it. As this church is one of the wealthiest in the city it would surely be possible by proper representations to have this rent remitted. Any true Christian church ought to be only too glad to contribute in this way to the success of such a work. Mr. Freshman receives no regular salary whatever: he and his good wife are truly living by faith day by day. She assists him to the extent of her power by visiting among the Jewish women, distributing tracts to them, and talking with them. The tracts for this purpose are for the most part printed by the British Society for the Conversion of the Jews. Many of them are in Hebrew.

Not the least interesting feature in my visit was the sight of a party of Russian Jews seated together in the body of the chapel. They could not understand one word of the service, but were here by the invitation of those who had been distributing Hebrew tracts among them at Castle Garden. Hearing that most of them could speak and understand German, I went up to them at the close of the service and had a very interesting conversation with them in regard to their past sufferings, present condition, and future prospects. Here, I reflected is another link in to-day's chain of coincidences: a reminder that there is now still another door open to those who believe that to us is committed the task of lifting the veil from Israel's eyes, "that they without us should not be made perfect."

Is it not practicable to organize a society for the Christianization of the Jews, composed of the ministers and members of all Christian churches and any others who feel an interest in this work, having all the means and appliances of other benevolent societies, and working with earnestness and prudence for its great end? Perhaps now is the appointed time. Do you know that careful calculations show that it is now just one thousand generations, three thousand three hundred and thirty-three years, since the giving upon Mount Sinai of the law which rules alike the life of the devout Jew and Christian?

Let the one thousand and first generation of Israelites born upon the earth since that awful day have an experience different from that of any generation before them, and let us win for ourselves the blessing promised to the friends of Jacob by the voice which declared to him, "I will bless them that bless thee."—*T. S. T. in Christian Union.*

MONTREAL NEWS.

WATTIER, the absconding jeweller, went to Boston. Detective Kellert found Zoe Drolet, whom he took with him and deserted there.

A COFFIN WAGGON ran away in St. James street, and threw a coffin at each door for quite a distance. Some of the scientific visitors asked if a plague had broken out.

THE DOMINION ABATTOIR was inspected by the Board of Health on Thursday, and all expressed themselves well pleased with its appointments and cleanly condition.

THE AMERICAN CATTLE COMMISSION visited Quebec and this city to inspect our quarantine system. They were much pleased with it, and will recommend its adoption in the States.

NOTHING FURTHER has been done in the Hunter case. Mr. Hunter is out of the city, and the deficit is now stated to be considerably over $100,000. No complete statement of his affairs has yet been made.

A BARGE belonging to McLennan Brothers, N. Y., went over the Carillon dam last Monday. The crew had a narrow escape, but were rescued in a raft boat by Capt. McNaughton and several men. The barge was a complete wreck.

A WRIT OF MANDAMUS was taken out by one Larivier to compel the Lake St. Francis Navigation to sign the lease of their boat to the Richelieu and Ontario Company, according to the resolution. The matter will shortly be argued.

THE LATE COLLECTOR OF CUSTOMS, Mr. W. B. Simpson, was presented with an address signed by nearly all the trading merchants, on retiring from a service in which he had been for forty years. It was accompanied by a gold snuff-box, in which was $1,000 in cash.

A TERRIBLE CHARGE has been made against a young woman named Julie Boisvert, employed as a servant by Telesphore Noel. She is accused of pouring concentrated lye down her master's child's throat. The little one was terribly burned. The girl was arrested on Monday.

A HORRIBLE ATTEMPT at suicide was made on Wednesday morning in a boarding-house kept in College street by a Mrs. Martin. An immigrant named Whitehead, who had been drugged and robbed of his money, cut his throat with a razor. He still is alive in the hospital, and there are hopes of his recovery. It seems that his wife is still in England, and that they were not happy.

THE GARRISON ARTILLERY are in camp at St. Helen's Island. They practise with common and shrapnel shell at a puncheon anchored in the river. Some of the shells in bursting sent pieces as far as the Longueuil wharf, while one shell crossed the bow of the "Longueuil" boat, missing it by only a few yards. The Field Battery are in camp on the Exhibition Grounds, and are in splendid form.

STATE OF IRELAND.

Later reports show that the murder of farmer Leahy, near Killarney, was more like a military execution than a murder. The leader of the party called upon "No. 1" to fire. He did so, badly wounding Leahy. The leader then ordered "No. 10" to fire. This shot also looked fatal. "No. 14" was then summoned to give the *coup de grace*. This was the last shot fired. Leahy remained alive half an hour after he was shot. Five sons of farmers have been arrested on suspicion.

Lord Spencer has declined to hold an enquiry into the conduct of the jury who convicted Hynes, but intends to examine the affidavits submitted to him in the case, in order to ascertain if sufficient grounds exists for interfering with the course of the law.

In the Commission Court, Dublin, on Tuesday, Patrick Walsh was found guilty of the murder committed in April, 1881, of Martin Lyden, and sentenced to be hanged.

A Dublin despatch says: The police of Cong have found four persons who, fearing their own relations were about to be attacked, followed the murderers of the Joyce family from the house where they assembled to Joyce's house, and heard the shrieks of the victims.

Another despatch says: The Cong police have found three eye-witnesses to the massacre of the Joyce family. They have positively identified four of the ten as having been overheard plotting the murder. The police believe the tragedy to be the direct outcome of the secret societies with which the West of Ireland is permeated. The witnesses are under protection, and their names are withheld. It is believed the trial of the prisoners will begin in a few days before the judges of the Commission Court in Dublin. The inhabitants of Cong district profess the liveliest joy over the capture of the band which has long been a terror to honestly disposed persons. The prisoners are described by the people as ten of the biggest devils in the country. The witnesses gave their evidence with the greatest firmness, without hesitation. The prisoners were positively identified. Police protection is unnecessary, as the entire population is their body guard. The people shook hands with the witnesses, saying "God bless you," and expressing gratitude and joy that the murderous gang had been run to the earth. During the investigation the prisoners frequently put questions, which only helped to prove their guilt.

DUBLIN, August 25.—The Lord Lieutenant has declined to interfere with Judge Lawson's course in the case of Mr. Gray.

The decision of Lord Spencer in regard to Mr. Gray's case was given in reply to a deputation of the Corporation in Dublin, headed by the Lord Mayor, who complained that Mr. Gray's sentence was arbitrary and excessive, and asked that a searching enquiry be made on oath as to the conduct of the jury which convicted Hynes and alleged abuses in regard to empanelling it. Earl Spencer said he was satisfied that no juror would be set aside on the ground of religion, and that the sole desire of the law officers was to obtain a fair, impartial jury.

The Constabulary held meetings on Saturday at the police barracks, most of the Constabulary deserting their beats for the purpose of attending. Telegrams were forwarded to other towns asking support, and a memorial was ultimately forwarded to Earl Spencer, to which a reply is awaited.

Notices of births, marriages and deaths invariably must be endorsed with the name and address of the sender, or otherwise no notice can be taken of them. Verses and extended obituary notices are charged for at regular rates.

BIRTHS.

EVANS.—On Thursday, August the 24th, the wife of A. Evans, of a daughter.

GLENNON.—In this city, on the 28th inst., the wife of Mr. Isaac Glennon, of a daughter.

HAY.—At 697 Wellington street, Lower Lachine Road, on the 21st inst., the wife of Robert Hay, of a son.

HENRY.—At Ausable Chasm, N.Y., on Tuesday, Aug. 22nd inst., the wife of Alexander Henry, of a son.

HOLMES.—At Beanharnois, on the 12th inst., the wife of Wm. Holmes, of a daughter.

INGRAM—On the 22nd inst., at Beaconsfield, Pointe Claire, the wife of W. J. Ingram, of a son.

JEFFERY.—At the Wesleyan Parsonage, Port Hope, on Monday, 21st inst., the wife of the Rev. T. W. Jeffery, of a daughter.

KAY.—At Grandby, North Ridge, Que., on the 19th inst., Mrs. William Kay, of a son.

LEWINTON.—At 15 Anderson street, on the 20th inst., Mrs. H. E. Lewinton, of a daughter.

McCRORY.—In this city, on the 22nd August, Mrs. Joseph McCrory, Cathcart street, of a son.

McKILLICAN.—At Vankleek Hill, August 23rd, Mrs. Wm. E. McKillican, of a son.

McNEIL.—At 68 St. James street, W., on Thursday the 17th inst., Mrs. P. McNeil, of a daughter.

MILLER.—On Saturday, August 26th, the wife of W. T. Miller, of a son.

MORRIN.—At Beach Ridge, Argenteuil, Que., on the 20th August, 1882, Mrs. Robert C. Morrin, of a daughter.

VANDETTE.—At Cote St. Paul, August 21st, 1882, Mrs. Leonora Vandette, wife of Silas J. Vandette, of a daughter.

WIER.—At 159 St. Ferdinand street, St. Henri, 21st Aug., Mrs. A. Wier, of a daughter.

WILSON.—At 132 Vitre street, on the 21st inst., the wife of James Wilson, of a daughter.

MARRIED.

BEHENNA—ARTHUR.—At Trinity Church, Boston, U.S., August 10th, by the Rev. Mr. Kidner, Harry youngest son of the late Capt. R. Behenna, R. A. of London, to Kathleen third daughter of the late Alexander Arthur, of Montreal.
English papers please copy.

COWAN—ARCHIBALD.—At St. Stephen's Church, on the 31st of July, by the Venerable Archdeacon Evans, Edward William Cowan, of the city of Montreal, to Edith L. Archibald, of Hull, County of Ottawa.
Ottawa and Sherbrooke papers please copy.

DAWSON—DONNELLY.—At the residence of the bride's father, Maple Lawn, Ironside, P. Q., on the 22nd inst., by the Rev. M. Stewart Oxley, B. A., assisted by the Rev. James Fraser, B.A., George William Dawson, of Montreal, to Lucy, eldest daughter of Horace Donnelly, Esq.

GALLETLY—BEATTIE.—On the 24th instant, at the residence of the bride's father, by the Rev. W. R. Cruikshank, James Galletly, of Perth, Scotland, to Mary, second daughter of William Beattie, Point St. Charles.

McCONNELL—ROSS.—In Buffalo, N. Y. on the 16th inst., Bert E. McConnell to Elizabeth Moir, third daughter of the late James Ross, of Montreal.

MOFFATT—GORDON.—On the 19th July, at Christ Church, Lancaster Gate, by the Rev. Canon Boyd Carpenter, Samuel George Warneford Moffatt, only son of George Moffatt, Esq., of Montreal, to Fanny Ethel, only daughter of William Gordon, Esq., of 11 Leinster Gardens, W. London, England.

DIED.

BARRIE.—At Valleyfield, P.Q., on the 21st inst., Marion Alberta, daughter of Alexander Barrie, aged 4 months.

BENTLEY.—At Moffat, Scotland, on the 24th August, Charlotte Darley, relict of the late William Bentley, Jr., of Wellshot, County Lanark, wife of D. J. Macbrair, Esq., Edinburgh, and mother of William Darley Bentley, Esq., Brazilian Consul-General for Canada.

CLANDINAN.—At Outremont, on the morning of the 23rd of August, Walter A., infant son of James Clandinan.

CONNOLLY.—In this city, on the 24th August, William John, beloved son of William Connolly, aged 23 years and one month.

COVENY.—At St. Gabriel village, on the 23rd inst., Jane Turner, age 36 years, wife of William Coveny, and sister of Messrs. Richard and John Turner.
Quebec papers please copy.

COULTER.—In this city, on the 23rd inst., Maggie Alexandria May, youngest daughter of John and Mary Coulter, aged 1 year and six months.

CULLEY.—In this city, on the 24th inst., Margaret Hearn, beloved wife of Samuel K. Culley, aged 47 years.
Hamilton, Ont., papers please copy.

CULMERRY.—In this city, on the 20th inst., Ellis Culmerry, nail cutter, formerly of Boonton, N. J., aged 50 years.

DAY.—In this city, on the 27th inst., after a short illness, borne with Christian fortitude, Margaret Buttrey, wife of Thomas Day, aged 64 years.

HARDISTY.—At Cote St. Paul, P.Q., on the 21st inst., Susannah Mary Ellis, aged 77 years, relict of the late R. E. Hardisty.

KELAHER.—In this city, on the 22nd inst., Annie, daughter of James Kelaher, aged 17 years and 3 months.

KNOX.—At Bismarck, Dakota, U. S., on the 30th May, 1882, Ellen Knox, aged 22 years 1 month and 17 days, formerly a resident of Kildare, P. Q.
Her end was peace.

LABATT.—At Engelberg, Switzerland, on 9th August, after a painful illness, George E. Labatt, aged 44, brother of Theo. Labatt, and formerly of Montreal.
New York *Herald* and London, Ont., *Free Press* please copy.

LEVETUS.—On the 25th August, Louis, infant son of H. G. Levetus.

LOYNACHAN.—At Beech Ridge, Argenteuil, Quebec, on the 20th August, 1882, John Loynachan, a native of Kintyre, Argyleshire, Scotland, aged 62 years.

McDERMID.—Near Martintown, Ont., on Monday, the 21st inst., Finlay H. McDermid, aged 42 years.

NELSON.—Died, at Sorel, Que., on the 18th instant, suddenly of heart disease, Elizabeth Walker, wife of Capt. R. Nelson, aged 59 years and 7 months. Much and deservedly regretted by a numerous circle of friends and relatives.

POLLOCK.—In this city, on 24th August, James K. Pollock, a native of Dalkeith, Scotland, aged 47 years.
Dalkeith, Scotland, papers please copy.

RICHARDSON.—Suddenly on the evening of the 21st August, 1882, John L. Richardson, aged 67 years, a native of Mountmellick, Queens county, Ireland.

RICHARDSON.—On Wednesday 22nd, Hester A. B. Richardson, twin daughter of William E. H. Richardson, aged 14 months and 26 days.

SAVAGE.—On the 18th August, George Savage, aged 58 years, a resident of West Shefford, P.Q.

SMITH.—At her father's residence, Kirk Hill, Glengarry, August 17th, Isabella McLeod, wife of Thomas Smith, aged 31 years and 8 months, of consumption, after a long and lingering illness borne with Christian patience. She leaves a husband and two children to mourn her loss.

STEWART.—In this city, on the 24th instant, Ethel Jane, only daughter of Mr. Henry Stewart, aged 8 weeks.

WATSON.—On Wednesday, August 23rd, of congestion of the brain, on the Steamer "Corinthian," Lake Ontario, (off Bowmanville), Edwin Stanley Lovelace, aged eleven months and two days, son of Edwin and Minnie Watson.

SPECIAL NOTICES.

PREMATURE loss of hair may be entirely prevented by the use of Burnett's Cocoaine. The superiority of Burnett's Flavoring Extracts consists in their perfect purity and strength.

IT IS SAID arrangements are being made to have Madame Carreno, the great pianist, visit Montreal during the Exhibition: if so, she will only play on the Weber Grand in the Queen's Hall.

THE NEW YORK PIANO CO., of this city, advertise a reduction of $50 to $75 on all their fine pianos on the extensive list (except the Weber), and $25 on their organs during the Provincial Exhibition.

THEY BRING GOOD PRICES.—J. S. Cooper, a prominent horse-dealer of Chicago, said in a reference to one-half and three-quarter blood Percheron-Norman horses: "They are the finest looking, most attractive. Gray being the prevailing color of the French horses, and that being the most fashionable color, it enhances the price. I would advise the farmers to breed their mares to Normans to preference to any other breed, and to breed lots of them, as the demand is far ahead of the supply."—*Chicago Tribune.* M. W. Dunham, Wayne, Ill., has imported from France and bred nearly 1,000 of this breed in their purity, and now has nearly 400 on hand.

THE STRANGER IN LONDON.—That the great City will ere long be hardly recognizable by the former denizens, all the world has heard. The visitor passing up the Thames now finds his eye gratified by the many handsome edifices recently erected. As he reaches the famous Victoria Embankment, there rises over him on the right hand the new *Times* office, and on the left hand the new tower-crowned works of Messrs. JAMES EPPS & Co., both phases of Italian architecture. It may be said that these two buildings are types of the far-reaching business energy of the nineteenth century, for it has resulted from such means that these two establishments have brought themselves to the fore, and that the issue of each has come to be estimated by millions. During the last year the number of copies of the *Times* issued is estimated at 16,276,000, which the number of packets of EPP'S COCOA sent off in the same period is computed at 14,749,695. The latter is a large total, when it is borne in mind that in 1830 the consumption of Cocoa throughout the whole kingdom was but 425,382 lbs., there then existing no preparation of it such as this, which by the simple addition of boiling water would yield a palatable drink. Truly time may be said to work many changes.

In purchasing articles advertised in the "Witness" please mention in what paper you saw the advertisement. Advertisers always wish to know which advertisements are most effective.

Advertisements.

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FREE GRANT LANDS.

THE MONTREAL AND WESTERN LAND COMPANY (Limited) have large tracts immediately north of the Qu'Appelle, near the Assiniboine, and with regular steamboat communication with Winnipeg. The land is magnificent rolling prairie, well watered and well wooded. For maps and pamphlets, apply to
DRUMMOND BROS. & CO.,
Montreal and Winnipeg.

MRS. LAY'S BOARDING AND DAY SCHOOL FOR YOUNG LADIES will be re-opened for the AUTUMN SESSION on
TUESDAY, SEPTEMBER 12th.
Mrs. Lay is assisted by accomplished Professors and Teachers in every Department. Pupils prepared for the University Examinations. French a daily study throughout the School. Music, Instrumental and Vocal, under the direction of Professors DuCharme and Couture and a competent Lady Teacher. Resident Pupils have all the comforts of home, with the advantages of regular study hours and careful personal supervision. The Juvenile Department is thoroughly organized and affords the best preparation for the advanced classes. A few little boys received. Applications may be made, personally or by letter, to MRS. LAY, 1738 St. Catherine street, West, Montreal.

Advertisements.

YES, EVERYWHERE!—In her bath-room, in her drawing-room, in her boudoir, in her carriage, at the ball or opera, on the promenade, everywhere, a lady requires as the extreme of refined enjoyment and fashionable luxury the fragrant aroma of the genuine Murray & Lanman's Florida Water.

WHAT TO STUDY.—Pope, the poetical philosopher, said, "The proper study of mankind is man," and yet, how little is the real science of man studied. If people understood and heeded the laws of health, and if, when out of sorts, would resort to a common sense remedy like Burdock Blood Bitters, many of the "ills that flesh is heir to" might be effectually remedied. It invigorates and regulates all the secretions to a healthy action.

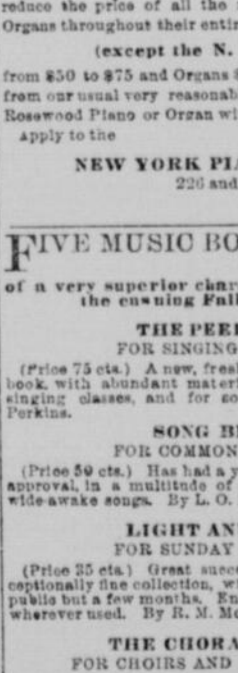
PEOPLE HAVE NO MORE RIGHT to become dyspeptic, and remain gloomy and miserable, than they have to take poison and commit suicide. If the stomach becomes weak and fails to perform its functions, Burdock Blood Bitters will speedily remedy the trouble.

THE ELECTRIC LIGHT, superseding as it does all other modes of illumination, and rivalled only by the glorious sunshine, will not be hailed with greater joy by mankind, than is Burdock Blood Bitters, which is as far superior to all other blood purifiers and tonics as the electric light is superior to the old-fashioned tallow dip. Burdock Blood Bitters cures Scrofula, and all foul humors and impurities of the blood.

HAGYARD'S YELLOW OIL is at the head of the list for all purposes of a family medicine. It is used with unprecedented success, both internally and externally. It cures sore throat, burns, scalds, frost bites; relieves, and often cures asthma.

SORE THROAT.—Apply Hagyard's Yellow Oil and take inwardly according to directions. Yellow Oil is the best remedy for Rheumatism, Neuralgia, Bruises, Burns, Frost Bites and all lameness, inflammation and pain. No household should be without it.

UNREASONABLE EXPECTATIONS are often entertained respecting medicines of real merit. Sufferers from complaints of long standing, anticipating and being disappointed in obtaining immediate relief from some remedy which, if persisted in, would eventually cure them, precipitately abandon it. This is unfair and absurd. We would urge, in their own interest, upon those troubled with affections of the throat and lungs who resort to Northrop & Lyman's Emulsion of Cod Liver Oil and Hypophosphites of Lime and Soda, that they give this sterling and proven remedy a fair trial. In obstinate cases this is particularly desirable, and though instances are not wanting in which it has overcome a severe cough with astonishing rapidity, it would be unreasonable to expect such a result in every case. Use it for asthma, bronchitis, irritation of the throat and lungs. Sold by all druggists. Prepared by Northrop & Lyman, Toronto.



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To sell the best, cheapest and most beautifully illustrated Family Bibles in the world. Exclusive territory given to good agents. Liberal discount. Send for descriptive circular.
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Sole Agent for Province of Quebec.

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EXHIBITION ANNOUNCEMENT.
During the Provincial Fair at Montreal, commencing 14th September, 1882, this Company will reduce the price of all the magnificent Pianos and Organs throughout their entire list,
(except the N. Y. Weber,)
from $50 to $75 and Organs $25 each. This reduction from our usual very reasonable prices will bring a fine Rosewood Piano or Organ within the means of all.
Apply to the
NEW YORK PIANO COMPANY,
226 and 228 St. James street, Montreal.

FIVE MUSIC BOOKS,
of a very superior character, for use during the coming Fall and Winter.

THE PEERLESS.
FOR SINGING SCHOOLS.
(Price 75 cts.) A new, fresh and every way desirable book, with abundant material for the instruction of singing classes, and for social singing. By W. O. Perkins.

SONG BELLS.
FOR COMMON SCHOOLS.
(Price 50 cts.) Has had a year's trial, with universal approval, in a multitude of schools. Large variety of wide-awake songs. By L. O. Emerson.

LIGHT AND LIFE.
FOR SUNDAY SCHOOLS.
(Price 35 cts.) Great success has attended this exceptionally fine collection, which has been before the public but a few months. Enthusiastic commendations wherever used. By R. M. McIntosh.

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FOR CHOIRS AND CONVENTIONS.
(Price $1.) It is the companion book to THE PEERLESS, is larger, and has a much greater number of pieces for choirs. The singing class course is the same as that in the smaller book. By W. O. Perkins.

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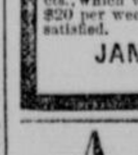
FOR HIGH SCHOOLS.
(Price $1.) This book, although of recent issue, has come to be regarded as a standard book for use in the higher schools. By W. S. Tilden.
Any book mailed, post-free, for the retail price.
OLIVER DITSON & CO., Boston.
C. H. Ditson & Co., 843 Broadway, New York.

WANTED, an educated young Lady, willing to make herself useful in a family, will find a comfortable home, with good salary, by applying by letter to A. B., Post Office, Little Metis, P. Q.

A FORTUNE.
Any one who will cut this out and return it to the address below, with 50 cents in stamps or coin, will receive 4 articles worth 10 times 50 cts., which will enable them to clear from $5 to $20 per week. Money refunded to any one dissatisfied.
JAMES LEE & CO.,
MONTREAL, CANADA.



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CAN BE CURED!
Thousands bear testimony to the fact. Send for circular giving particulars. Address, L. D. McMICHAEL, M. D., 63 Niagara St., BUFFALO, N. Y.

LADIES' SCHOOL,
186 Bleury street,
Conducted by Mrs. STONE,
Will Re-open MONDAY, 4th Sept., 1882.

DAY AND EVENING SCHOOLS
—OF THE—
PROPRIETARY COLLEGE, 186 Bleury st.
Will Re-open MONDAY, 4th Sept., 1882.
Rev. A. STONE, Head Master.

FOR SALE, fine Farm, in Derby, Vt., within a mile of Newport, and close to West Derby Village. It contains 140 acres, and is suitable for a "gentleman's farm." It is noted for beauty of situation and commodiousness of the buildings. A part of the farm near the village having an unsurpassed view of Lake Memphremagog. Might be sold for building lots. Terms liberal. For particulars apply to DAVID LAIDLAW, 450 Notre Dame street, on the place or by letter to the proprietor, Rev. J. FRASER, West Derby, Vt.

IN ALL CHRONIC KIDNEY TROUBLES we have evidence of errors in nutrition, as in Bright's disease from over-stimulation arresting repair and hastening degeneration, diabetes from functional liver derangements secondary to impaired digestion, irritation and pain in the back from uric acid or *brick dust deposit* in the urine, a sequence of mal-assimilation and a common cause of neuralgia and rheumatism. By securing the perfect conversion of food into healthy blood to maintain the constructive work of the organs and tissues, we have in Wheeler's Phosphates and Calisaya the most certain cure of these ailments.

PARCELS OF SECOND-HAND BOOKS bought at the highest market price for popular works. $5 per volume paid for Hochelaga Depicta or Hawkin's Picture of Quebec, at REALY'S Book Store, 663 Craig street.

Advertisements.

BRILLIANT SCIENTIFIC TRIUMPH.
Thousands cured of Catarrh, Bronchitis, Asthma and Lung Diseases by Dr. M. Souvielle's Spirometer, an instrument which conveys medicinal properties direct to the parts affected. These wonderful instruments are used in all first-class hospitals, and are prescribed by leading physicians. Full directions for treatment sent by letter, and instruments expressed to any address. It is only since Souvielle's invention that lung diseases are no longer feared. until their very last stage. Write for paticulars to D. M. Souvielle, ex-Aide Surgeon of the French Army, 13 Phillips Square, Montreal; all letters must contain stamp for reply.

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Under Contract with the Governments of Canada and Newfoundland for the conveyance of the CANADIAN AND UNITED STATES MAILS.

1882. SUMMER ARRANGEMENTS. 1882.

This Company's Lines are composed of the following Double-Engined, Clyde-built, IRON STEAMSHIPS. They are built in water-tight compartments, are unsurpassed for strength, speed and comfort, are fitted up with all the modern improvements that practical experience can suggest, and have made the fastest time on record.

Vessels.	*Tonnage.*	*Commanders.*
Numidian	5100	(building).
Parisian	5400	Capt. James Wylie.
Sardinian	4650	Capt. J. E. Dutton.
Polynesian	4100	Capt. R. Brown.
Sarmatian	3600	Capt. John Graham.
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Moravian	3650	Lt. F. Archer, R.N.R.
Peruvian	3400	Capt. Joseph Ritchie.
Nova Scotian	3300	Capt. W. Richardson.
Hibernian	3434	Capt. Hugh Wylie.
Caspian	3200	Lt. R. Thomson, R.N.R.
Austrian	2700	Lt. R. Barrett, R.N.R.
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Corean	4000	Capt. Barclay.
Grecian	3600	Capt. LeGallais.
Manitoban	3150	Capt. MacNicol.
Canadian	2600	Capt. C. J. Menzies.
Phœnician	2800	Capt. John Brown.
Waldensian	2600	Capt. R. P. Moore.
Lucerne	2200	Capt. John Kerr.
Newfoundland	1500	Capt. Mylins.
Acadian	1350	Capt. F. McGrath.

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LIVERPOOL, LONDONDERRY & QUEBEC MAIL SERVICE.
Sailing from Liverpool every THURSDAY, and from Quebec every SATURDAY, calling at Lough Foyle to receive and land Mails and Passengers to and from Ireland and Scotland, are intended to be despatched

FROM QUEBEC.

SARMATIAN	Saturday,	July 29
POLYNESIAN	"	Aug. 5
SARDINIAN	"	" 12
CIRCASSIAN	"	" 19
PERUVIAN	"	" 26
PARISIAN	"	Sep. 2

Rates of Passage from Quebec:
Cabin .... $70 and $80.
(According to accommodation.)
Intermediate .... $40.
Steerage .... $25.

THE STEAMERS OF THE
GLASGOW AND QUEBEC SERVICE
Are intended to sail from Quebec for Glasgow as follows:

MANITOBAN	About	July 28
BUENOS AYREAN	"	Aug. 4
LUCERNE	"	" 18
HANOVERIAN	"	" 25
MANITOBAN	"	Sep. 1

THE STEAMERS OF THE
LIVERPOOL, QUEENSTOWN, ST. JOHN'S, HALIFAX AND BALTIMORE MAIL SERVICE,
Are intended to be despatched as follows:

FROM HALIFAX.

PHŒNICIAN	Monday,	July 31
HIBERNIAN	"	Aug. 14
NOVA SCOTIAN	"	" 24

RATES OF PASSAGE BETWEEN HALIFAX AND ST. JOHN'S:
Cabin .... $20 | Intermediate $15
Steerage .... $6.

THE STEAMERS OF THE
GLASGOW, LIVERPOOL, LONDONDERRY, GALWAY, QUEENSTOWN AND BOSTON SERVICE.
Are intended to be despatched as follows from Boston for Glasgow direct:

WALDENSIAN	About	July 29
NESTORIAN	"	Aug. 5
PRUSSIAN	"	" 12
SCANDINAVIAN	"	" 19
WALDENSIAN	"	Sep. 2

Persons desirous of bringing their friends from Britain can obtain Passage Certificates at lowest rates.
An experienced Surgeon carried on each Vessel. Berths not secured until paid for.

THROUGH BILLS OF LADING
Granted at Liverpool and Glasgow, and at Continental Ports, to all Points in Canada and the Western States, via Halifax, Boston, Baltimore, Quebec and Montreal; and from all Railway Stations in Canada and the United States to Liverpool and Glasgow,
VIA BALTIMORE, BOSTON, QUEBEC AND MONTREAL.

For freight, passage or other information, apply to JOHN M. CURRIE, 21 Quai d'Orleans, Havre; ALEXANDER HUNTER, 4 Rue Gluck, Paris; AUG. SCHMITZ & Co., or RICHARD BERNS, Antwerp; RUYS & Co., Rotterdam; C. HUGO, Hamburg; JAMES MOSS & Co., Bordeaux; FISCHER & BEHMER, Schusselkorb No. 8, Bremen; CHARLEY & MALCOLM, Belfast; JAMES SCOTT & Co., Queenstown; MONTGOMERIE & WORKMAN, 17 Gracechurch street, London; JAMES & ALEX. ALLAN, 70 Great Clyde street, Glasgow; ALLAN BROTHERS, James street, Liverpool; ALLANS, RAE & Co., Quebec; ALLAN & Co., 72 La Salle street, Chicago; H. BOURLIER, Toronto; LEVE & ALDEN, 207 Broadway, New York, and 15 State street, Boston. Or to
H. & A. ALLAN,
80 State street, Boston, and
25 Common street, Montreal.

$72 A WEEK. $12 A DAY at home easily made. Costly outfit free Address TRUE & CO., Augusta, Maine.

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The subscriber would respectfully inform his many friends in the County of Two Mountains and neighboring counties, that he has removed his Saddlery and Harness business to No. 46 Bonaventure street, Montreal, where he will always be happy to see his old friends and acquaintances when in the city.
J. W. ROBERTS,
Formerly of Belle Rivière, County Two Mountains.

HAMMOCKS! HAMMOCKS!
Best value at lowest price. Only a few left. No more at the prices.
JAMES BAYLIS & SON,
459 and 461 Notre Dame street.
THE CARPET WAREHOUSE.

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