THE WEEK'S NEWS

CANADIAN.

A new religious order for women is shortly to be opened in St. Henri, Quebec.

Winnipeg is looking around with a view to securing an improved electric street railway system.

The Barnum Wire and Iron Works of Windsor intend moving the rest of their machinery to Toronto next month.

Mr. G. M. Dawson, assistant director of the Canadian Geological Survey, has been elected a fellow of the Royal Society of England.

The exports of live stock from Montreal last week, the opening week of the season, were 2,653 cattle and 100 sheep.

The citizens of Hamilton will tender a complimentary banquet to Mr. Adam Brown, ex-M.P., on his return from Jamaica.

Last Sunday at St Andrew's, Man., about 30 Indian converts were baptized by the Plymouth Brethren in the Red river. The bath was a very cold one.

Mr. Nicholas Flood Davin is again after Commissioner Herchmer's scalp. He has given notice that he will ask for an enquiry into the conduct of that gentleman during the late election in Western Assiniboia.

Both branches of the Newfoundland Legislature have decided to endorse the action of the delegates to England, and to carry into effect the proposals made by them to the British Parliament and Government.

It is stated that Premier Mercier has not yet attempted to place the $10,000,000 Quebec loan on the European markets, and if he finds the present time unfavorable he will shortly return home and make another trip to England later in the season.

An increase in liquor licenses at Montreal has caused a general rise in the price of liquor.

The Queen will give a £100 cup for competition between Canadian yachts, the first race to take place at Toronto.

At the Montreal reception to the Parnell delegates on Friday night, a sum of fifteen hundred dollars was subscribed.

The Union Baptist Education Society of New Brunswick has assigned to Jacob S. Titus for the benefit of creditors. The floating liabilities are $20,000.

The physicians at the Western hospital, Montreal, report that a lady 23 years of age has been cured of consumption by the Koch treatment.

Senator Boulton has given notice of motion for an address to the Queen asking for Imperial aid towards the Hudson Bay railway.

It is rumoured that the Dominion members contemplate a raid on the treasury this session, desiring to have their indemnities increased to $1,500.

English Imperial federationists are said to be pleased with the announcement that the Dominion Government is considering the question of a reduction in the postal rate.

The Newfoundland Government intends making American fishing vessels deposit $1,000 in cash instead of bonds, to prevent the exportation of bait to St. Pierre Miquelon.

The difference of opinion between Montreal live stock exporters and the steamship companies as to the amount of space for cattle still continues, but will likely end in a compromise.

Mr. Elias Rund, of Christiania, Norway, is at present in Montreal on his way to the Pacific coast to inspect the country, as he is of opinion that the climate of Canade will suit Norwegian emigrants much better than that of the United States.

The C. P. R. Pacific express broke through a partially burned trestle near Straight lake on Saturday. One passenger named McAlpin, from Quincy, Mass., was killed and five passengers injured, only one seriously. A forest fire was the cause.

The Canadian Pacific railway is asking for power to purchase subsidiary lines willing to sell, and for permission to sell surplus lands and to devote the proceeds to the purchase of rolling stock.

AMERICAN.

The United States cruisen Charleston is in chase of the Chilian insurgent warship Esmeralda, and a fight is not improbable. The guns of the Esmeralda are the heavier, while the Charleston is the swifter boat.

An agreement has been arrived at between the Detroit Street Railway Company and its employees, whereby the men are to work ten hours per day, with seventeen cents per hour for drivers and eighteen cents for conductors.

Signor Corte, the Italian Consul at New Orleans, has been recalled by his Government.

There are over 10,000 miners on strike in Iowa, and the supply of coal is running short.

The hamlet of Alton, Mich., is in ashes. There is not a building left in the place.

Millions of dollars worth of damage has bee done by the forest fires now raging in the Michigan lumbering district.

A monument has been erected 20 miles east of Columbus, Ind., to mark the centre of population of the United States.

Secretary Blaine is seriously ill in New York. The medical attendants say he is suffering from overwork and indigestion, and that he must take an absolute rest.

The total gold exports from New York last week amounted to $7,228,620.

There was a run on the Third National Bank in Philadelphia on Saturday, but all demands were met without trouble.

The recent experiments made by the United States Government in nickel steel plate armor have been favorable and satisfactory.

During the past week there arrived in New York 18,457 immigrants, the largest number in seven days since last summer.

Over $1,000,000 worth of property was destroyed in the Pittsburg conflagration.

The Massachusetts state board of health reports 17 deaths from hydrophobia during the past year, the highest number ever recorded.

The Bay State Shoe Fastening Company, of New Hampshire, has been wrecked. The treasury of the company is depleted and $147,000 is unaccounted for.

There is a growing impression in Washington that the result of the negotiations now being conducted by Secretary Blaine and Sir Julian Pauncefote will be a close sealing season this year in Behring Sea.

Grandmother Connolly, of Hazleton Pa., 110 years of age, to prevent her removal to the almshouse, set fire to her bed clothes and burned herself to death.

At the International Convention of the Young Men's Christian Association held at Kansas City, a resolution was adopted in favour of closing the World's Fair of 1893 on Sundays.

The N. Y. *Tribune's* Washington correspondent gives the opinion of Mr. Leich, of the treasury department, to the effect that the present outflow of gold is neither unprecedented nor alarming.

The collector of customs at Rochester, N. Y., has been informed by the treasury department that cattle and sheep cannot be imported at Charlotte, N. Y., in the absence of a quarantine station there.

Kate Ford, who enticed an Omaha traveller named David Moore into the city park at Ottawa, Ill., where the man was murdered, has been sent to penitentiary for 14 years. Charles Ford, her husband, was hanged for the murder.

GREAT BRITAIN.

It is expected that the baccarat scandal case, in which Sir William Gordon Cumming and the Prince of Wales figure, will come to trial on June 1.

The leaders of the mob of Anarchists who on May 1st had a fight at Clinchy with the police and soldiers have escaped from Paris, and are now in London.

Influenza is spreading in England, and in the House of Commons alone there are 41 members laid up with the disease.

Sir Charles Tupper is to be banqueted shortly by Imperial federationist politicians in England.

An explosion took place in the firehold of the British steamer Tancarville, undergoing repairs at the dry-dock at Newport, which resulted in the death of eight men and the injury of twenty-five others who were engaged in repairing the ship at the time.

Mr. Gladstone is on the sick list. He went to church on Sunday as usual, but in the afternoon he was seized with a succession of shivering fits. Sir Andrew Clarke was called in, and he says the veteran statesman must not leave his room for several days.

The German Exhibition in London was opened on Saturday by the Lord Mayor and the Marquis of Lorne.

An increase of the Bank of England rate is likely to be made in view of the probable withdrawal of gold by Russia, who is angry over the Rothschilds' refusal to negotiate a loan.

A man named Pinter was committed for trial in London, Eng., Wednesday for attempting to swindle a jeweller out of £40-000 by representing that he possessed the philosopher's stone, capable of transmuting into gold the baser metals.

The coroner's jury in the case of Lord James Douglass rendered a verdict on Wednesday that the deceased committed suicide while suffering from temporary insanity.

IN GENERAL.

A sculling match has been arranged for July 7 on the Parramatta between McLean and Stanbury.

It is believed that the action of the Rothschilds in endeavouring to coerce the Czar will result in further hardships for the Jews.

A despatch from Tokio, Japan, announces that an attempt has been made upon the life of the Czarewitch by a Japanese, who attacked him with a sharp sword. The Imperial traveller, though seriously wounded, is not considered to be in any danger of dying.

The Customs Count of the French Chamber of Commerce has decided that the duty on wheat shall be reduced to 3f.

The anarchists arrested in Rome have confessed that Landi paid them to create disorder on May day.

Willian Jacques, an American citizen, was mobbed and stoned in Florence on Wednesday.

The French Chamber of Deputies has rejected a proposal to grant amnesty to the May day rioters.

Emperor William has created another outburst of astonishment by his speech to the students at Bonn, in which he expressed his royal approval of duelling.

The German Reichstag was hurriedly brought to a close on Saturday to prevent Prince Bismarck taking his seat until the autumn.

The Italian press is indignant at the report of the New Orleans grand jury, and the *Popolo Romano* says it will be impossible hereafter for any civilized country to make a treaty with the United States based upon reciprocal protection of the lives of the citizens of either country.

Canadian Railways.

The report of the Minister of Railways and Canals shows that the number of railways, including the Government roads, in actual operation was 50. The number of miles of railway completed, irrespective of sidings, was 13,325, of which 12,539 were laid with steel rails. There were 12,628 miles of railway in actual operation. The paid up capital amounted to $760,576,446. The gross earnings of all these railways amounted to $42,149,615, and their working expenses to $31,038,045, leaving the amount of net earnings $11,111,570. They carried 12,151,051 passengers and 17,928,-626 tons of freight. The total number of miles run by trains was 38,819,380. During the year ending June, 1890, the Dominion Government paid out $1,678,195 in earned subsidies to railways, and in the six months between that date and the 31st of December last, $683,089 more. The total payments since 1883 amount to $8,424,076, not including the C. P. R. subsidies, nor the subsidy to the Canada Central, nor the subsidy to the Quebec Government for the line from Ottawa to Quebec.

A Fish Story.

Crows are commonly said to live for 100 years, and turtle are said to have even longer life, but the greatest amount of longevity is possessed by fishes. A naturalist once said that as a fish had no maturity there is nothing to prevent it living indefinitely and growing continually. He cited, in proof, a pike in Russia whose age is known to date back to the 15th century. In the Royal aquarium at St. Petersburg, there are hundreds of fish that were put in over 150 years ago.

DISCOVERIES IN SCIENCE.

The Stars.

BY J. NORMAN LOCKYER, F. R. S.

Every well-brought-up English child is supposed to lisp, before he or she is six or seven years old:

"Twinkle, twinkle, little star,
How I wonder what you are."

I have little doubt that young people in America have the same peculiarity, since I have been asked to tell in *The Youth's Companion* how astronomers are endeavoring to replace the wonder, and I may add, the mystery concerning star structure, by certain knowledge. It may also be said that, although astronomy is not being studied by so large a relative proportion of the population as formerly, still the means of finding out things about the stars recently have been so greatly increased, chiefly by the aid of the prism and the photographic plate, that very much of the certain knowledge to which I referred is of quite recent date.

THE CHIEF CONSTELLATIONS.

It is not generally known how easy it is to get a sufficient knowledge of the chief constellations to enjoy to the full the magnificent picture presented to us:

"When in heaven the stars about the moon
Look beautiful, when all the winds are laid,
and the unmeasurable heavens
Break open to their highest, and all the stars
Shine."

The best way is to begin with the pole-star, and then, by using the simplest star-map procurable, gradually to work further and further away from it, until at length the constellations which lie along both the equator and the ecliptic become quite familiar. When this knowledge has been even approximately obtained, the movements, both of the moon and the planets, among the stars from night to night, will afford a source of purest enjoyment.

STARS SEEN BY THE NAKED EYE.

One is afraid to say how many thousands of years ago were made the first observations of stars of which we have any certain knowledge, but in all probability they were made not less than seven thousand years ago, by priests in Egypt, who required to know when certain stars rose above the eastern horizon, in order that their morning sacrifice might be offered at the proper time, that is, exactly at sunrise.

Nowadays, such eye observations have given place to others made by elaborate instruments, which enable us to observe stars, not only on the horizon, but in any part of the blue expanse of heaven; while by the increased power of telescopes the number of stars within our ken has been increased from six thousand, the number which may be seen in both hemispheres by the naked eye, to probably about eighty million.

OUR SUN A STAR.

Most young folks now know that the difference between night and day on this planet of ours arises simply from the fact, that among the innumerable multitude of stars, there is one infinitely nearer to us than all the rest. Being so much nearer to us, when we see it we have day. When by the earth's movement on its axis the sun has set in the west, we have night; at which time we depend for light upon the more distant stars—unless, indeed, the moon is shining.

In the main, it is true that the enormous difference in the intensity of the light that we receive from the sun in the one case, and from all the stars seen at night in the other, depends upon the fact that the sun is the star nearest to us, and the other stars are suns infinitely removed.

The amount of light we receive from any star depends upon its distance, its size, and the brilliancy of its surface. A faint star faraway may, therefore, be much larger than one which appears brighter to us because it is nearer, and as a matter of fact it is known that some faint stars have a much larger mass, that is weigh more, than Sirius, the brighest star in the heavens, although this latter star is three times heavier than our sun.

The star nearest to the earth, Centauri, is about two hundred and seventy-five thousand times as far from us as the sun is, and Sirius is about twice as far away as that; if, however, we could view these bodies at an equal distance, Centauri would appear nearly twice as bright as our snn, and Sirius forty times as bright.

Further, we know that all these bodies, although they are called fixed stars in astronomy books, so far from being fixed are all in rapid movement, and the rate in some cases fills us with astonishment. Thus, one star (1830 Groombridge) has a velocity of not less than two hundred miles a second. This would carry it from New York to Constantinople in about a minute, and from the earth to the sun in five days. Another star (61 Cygin) has a velocity of not less than thirty miles a second, or three million miles a day.

So far, then, we find that the stars are at different distances, that they are of different sizes, and that instead of being fixed, they are all in movement.

THE LIGHT OF THE STARS.

We now come to another question. Why do these bodies, whether near or distant, give out light? They give out light because they are hot, and some of them are hotter than almost anything we can imagine. But we are not left to our imagination. By the use of the prism, the child's wonder as to what the stars may be has been changed into a certain knowledge of what stars like the sun really are. Such bodies are masses of glowing gas, the materials of which are for the most part precisely the same as those of which our earth is built up; the great difference between such stars and the earth, at the present time, being that they are hot while the earth is cold.

All the metals, or nearly all of them, which we read of in books of chemistry, have been found in the sun; and it is quite possible that some of the non-metals may exist in a part of the sun which we cannot get at by our methods of work. However this may be, we may be sure that the non-metals will be in the sun some day, and that when the sun is as cool as the earth, its chemical composition will resemble our own essentially.

The sun is so hot at present, that its outer atmosphere, instead of being composed of cool oxygen and nitrogen and water vapor, as happens with our own, consists of brightly shining hydrogen gas and iron vapor chiefly. The iron is not solid, and it is not molten, but exists as iron steam, at perhaps a distance of two hundred thousand miles above the shining orb that we see and call the sun. This, I think, may be taken as a fair indication that the sun is, indeed, a very hot body, especially when we remember that as its centre is approached, the temperature must always increase.

ARE ALL STARS LIKE THE SUN?

I have said this much about the sun, because it is very natural to ask whether all stars are like the sun? It used to be taught that they were, but I, for one, do not think this is so. When we come to examine the bodies which shine in the sky, those dim patches of gray light called nebulæ as well as many of the stars themselves, the prism tells us that the light which they send to us is very different from the light sent to us by the sun, and by other stars the light of which is exactly like sunlight.

It is fair to suppose that if the light sent out is different, the body which sends it out must also be different in some way or another. A great deal of work recently done shows that probably many stars, instead of being like the sun, are built up as the comets are, of enormous clouds or swarms of little bodies, some of them, perhaps, no bigger than grains of dust, the different quantities and qualities of the light given out depending upon the motions of these little particles, and the average distance between them. So when we have a great many of these little masses closely packed together and moving rapidly, they will have an opportunity to strike one another, and thus produce light and heat in a greater degree than can happen in those other so-called "stars," where the dust is sparser, and the motion less rapid.

HOW STARS ARE FORMED.

This is an idea which has lately been suggested, and I refer to it here, because it appears to make clear a great many points on which children even of a larger growth have been long puzzled.

The idea, in its most general form, is that the bodies which shine in space, whether nebulæ, comets, stars, planets or moons, all start in the same way. For the starting point, it is imagined that they all consist of the little particles to which I have referred, far apart, and not in very rapid movement. Collisions take place between these particles, and give rise to light as the striking of a flint against a steel gives rise to light. The light at first is dim, because the collisions are not numerous, but in time the little particles condense toward a centre which, therefore, becomes brighter because the particles are then nearer together, clashing together oftener, and, therefore, developing a larger amount of heat and light.

In this way we pass from what we see in the heavens as patches of milk-white light called nebulæ, to other bodies even hotter than our sun; and when the stage is reached in which we see specks of light merely, and deal with "stars" properly so-called, we get a hot body which increases in temperature as all the little particles arrive at the centre, until the motion of all of them has been changed into heat, and a ball of vapor results, very, very hot.

As soon as the supply of heat ceases, the mass begins to cool. Our sun is such a cooling mass. The cooling goes on till at last a body, such as our own earth, is formed. This is why it is that the chemical composition of the sun and earth are so similar.

If this is what really happens, we can easily explain the colors of all the stars. Each stage of heat in a star has its own special color. It is true that sometimes very nearly the same color is produced at two different stages of heat, but apart from this, we know that very white stars are at the condition of their greatest heat, and that yellow stars are cooler, though some are old, some young; and that very red, but especially blood-red, stars are tottering on the verge of invisibility, having run through all their changes.

VARIABLE STARS.

So far we have considered that the quantity of light given out by a star depends upon its age, so to speak. But this is not all. In some cases stars, although we do not see them as double stars, are really double, and this causes them to vary their light. We may imagine one swarm of colliding and light-giving bodies going round another; and if the swarms are not always the same distance apart, and there is good reason why they sould not be, they will at times, so to speak, intermingle, and then there will be more opportunity for clashings, and therefore, more light will be given out. The star will be what is called a "variable star," and the waxing and waning of the light will be regular, if we are dealing with two swarms only, or irregular, if we are dealing with more.

Not only so; the two swarms which consisted of separate particles in the first instance will eventually become bodies like the sun, and go on until both have become cooling bodies, one of them, perhaps, cooler than the other. Then it may so happen that the cooler body will come between our earth and the brighter one, and stop some of its light in the same way that our moon stops the light of the sun from reaching the earth in a solar eclipse.

These, then, are some of the points about stars on which facts are being accumulated, so that it is certain that the more our knowledge increases, the more the majesty of the universe of which each of us forms a part will be revealed.

It should please the youth of America to know that a noble American lady is at the present time doing more than all the rest of the world put together, to bring the facts of star-life before us; and there is little doubt that when the "Henry Draper Memorial" is completed, what the stars really are will be far better known. At present we are looking through many glasses darkly. We shall then be face to face with records which cannot err, for tens of thousands of stars will have told their own story in the language of light.

Last of the Borgias.

The announcement of the death of the last of the Borgias might be thought matter of historical interest, if the person last bearing that ill-omened name had been other than what he was. Even as it is, one finds it deserving of more than a passing mention. The line began with a Pope, and at the end of four hundred years ends in a street beggar in a small German town, near Salsburg, his wife a washerwoman, and both in the last stages of destitution. There is no blacker name on all the list of bad men in the papal chair than that of Rodrigo Borgia, who in 1492 became Pope Alexander VI. Among detestable characters in history, there are few with so little to relieve the dark record as that of his natural son, Cæsar Borgia, a man guilty of almost every kind of base and cruel deed in the calendar of crime. The family name which has so long been in history the synonym of baseness and cruelty now disappears from the roll of living humanity.

LONGEVITY OF CELEBRITIES.

Moltke's Great Work Done After he Had Reached the Age of 66.

Moltke did not quite reach the years of Wrangel, who died in 1877 at the age of over 93, nor did he quite equal Emperor William I., who lacked but thirteen days of completing his ninety-first year. Two years ago the *St. James's Gazette*, noting that "the majority of Prussian field marshals have been old men," found plenty of examples also of aged English soldiers of celebrity, present and past, including Sir Patrick Grant, who at that time was about 85 years old, with seventy years' service; Lord Napier, then 79; Wellington, who died at 83, after sixty-five years of service; Lord Gough, who lived to 90, with seventy-five years of service; Sir John Burgoyne, who entered the army at 16 and reached the age of 89. Of the French veterans it cited McMahon, at that time 81 years old; Canrobert, at that time 80; Soult, who died at 82, after sixty-six years of service; Grouchy, who died at 81, and so on. To these examples may be added that of the longest-lived of our more distinguished revolutionary soldiers, Stark, who died at the age of nearly 94. Admiral Wallis of the British navy celebrated recently his hundredth birthday.

But of course the interest on this point in Moltke's carcer is, that the great work of his life was done after he had reached the age of 66; and, indeed, until 60 he was little known outside of Prussia. His supreme achievements were effected at the age of 70 and 71; but no one ever questioned that he was in his full vigor as a strategist at 80, or that Germany's chief reliance would have been on him, for planning and directing her campaigns, up to a very few years ago. Indeed he gave evidence of his ability until his resignation of his office of chief of the general staff in August, 1888, to do its routine work, in supervision and criticism, with his wonted vigor and precision.

How His Mother "Managed."

"You see how it is, my dear," he said, taking her soft hand, which had never done very hard work, and patting it reassuringly, "I'm poor—only a thousand a year, dear—and we shall have to struggle to get along at first—"

"I don't mind that in the least," she interrupted, stoutly, rubing her cheek softly against his hand.

"And," he paused, graciously having allowed her interruption, "we shall have to come down to strict economy. But if you can only manage as my mother does we shall pull through nicely."

"And how does your mother manage, dear?" she asked smiling—but not very happily—at the notion of the mother in-law cropping out already.

"I don't know," replied the lover, radiantly; "but she always manages to have everything neat and cheerful, and something delicious to eat—and she does it all herself, you know! So that we always get along beautifully, and make both ends meet, and father and I still have plenty of spending money. You see when a woman is always hiring her laundry work done, and her scrubbing and stove-blacking done, and all that sort of thing—why it just walks into a man's income, and takes his breath away."

The young woman looked for a moment as if her breath was also inclined for a vacation; but she wisely concealed her dismay, and, being one of the stout-hearted of the earth, she determined to learn a few things of John's mother, and so went to her for a long visit the next day. Upon the termination of this visit one fine morning John received, to his blank amazement, a little package containing his engagement ring, accompanied by the following letter:

"I have learned how your mother manages," and I am going to explain it to you, since you have confessed you didn't know. I find that she is a wife, a mother, a housekeeper, a business manager, a hired girl, a laundress, a seamstress, a mender and patcher, a dairy maid, a cook, a nurse, a kitchen gardener, and a general slave for the family of five. She works from five in the morning until ten at night; and I almost wept when I kissed her hand, it was so hard and wrinkled, and corded and unkissed. When I saw her polishing the stoves, carrying big buckets of water and great armfuls of wood, often splitting the latter, I asked her why, John didn't do such things for her. 'John!' she repeated, 'John!'—and she sat down with a perfectly dazed look, as if I had asked why the angels didn't come down and scrub for her. 'Why—John'—she said, in a trembling, bewildered way—'he works in the office from nine until four o'clock, you know, and when he comes home he is very tired, or else—or else—he goes down town.' Now, I have become strongly imbued with the conviction that I do not care to be so good a 'manager' as your mother. If the wife must do all sorts of drudgery so must the husband. If she must cook, he must carry the wood; if she must scrub, he must carry the water; if she must make butter, he must also milk the cows. You have allowed your mother to do every thing, and all that you have to say of her is that she is an 'excellent manager.' I do not care for such a reputation, unless my husband earned the name also; and, judging from your lack of consideration for your mother, I am quite sure you are not the man I thought you were, nor one whom I should care to marry. As the son is the husbaud is, is a safe and happy rule to follow."

So the letter closed, and John pondered, and he is pondering yet.

Germany's Ruler.

Continental Europe waits in a hushed expectancy of apprehension upon the results of Russia's huge financial and political operations. Nobody dares break the general silence except the young Kaiser, and his voice seems to an attentive listener to have a slight hysterical quaver. His remark in his Dusseldorf speech the other day about his regret that he was not the sole custodian of the peace of Europe has been much commented upon. It is universally construed to signify that the Czar was the one who holds the balance in his hands, but perhaps that merely testifies to the general nervousness.

Between seven and eight hundred petitions have already been presented to the House of Commons this session, and there are doubtless more to come. Whatever may be the cause of the extraordinary growth of this industry it is to be feared that its fruits will not be commensurate therewith. Petitions make an excellent stuffing for pigeonholes, and that is all.