### NOTES OF SIENCE AND INDUSTRY.

Investigations made by Sir William Thom son show that metallic copper, when heated to the erature of boiling water, in contact with ber, exerts upon it a destructive effect. In order to ascertain whether this is due to the copper in or of itself, or to its power of conducting heat more rapidly to the rubber, a sheet of rubber was laid upon a plate of glass, and on it four clean disks were placed, one of copper, one of platinum, one of zinc, and one of silver. After a few days in an incubator at one hundred and fifty degrees, Fan., the rubber under the copper had become quite hard that under the platinum had become slightly affected and hardened at different parts, while the rubber under the silver and under the zinc was quite hard, and elastic. From this it would appear that metallic copper exerts a great oxidizing effect on rubber, while platinum has only a slight effect and zinc and silver respectively have no injurious influence at all. The interesting fact also appears that the rubber thus hardened by the copper really contained no appreciable trace of copper-the latter, therefore, presumably, setting up the oxiziding action in the rubber without itself permeating it.

One of the largest establishments in this country has for some time been turning out paper belts that have the reputation of being superior in many respects to those of leather; these belts are made from pure linen stock, and are of any desired thickness, width, or length, having also a driving power equal to any other from an equal surface, and, while it is not claimed for them that they are adapted to all kinds of work, they are found to serve well as straight driving belts of not less than five inches in width. Where they have been tested side by side with leather belts for strength and durability, they are alleged to have proved equally satisfactory, adhering very closely to the pulley, generating no electricity while running, being also flexible, and unaffected by temperature within ordinary limits, though there is one place in which they cannot be used, and that is where they have to run in water, or where they would be constantly subjected to moisture. It is admitted that this kind of belting is best adapted to heavy driving belts, and for this purpose it is not only much the cheapest material, but when once in position will run until worn out.

As compared with the products of other countries in this line, the residue from the distillation of Canadian petroleum are pronounced superior in the manufacture of lubricating oil and vaseline. They form a viscid and even soapy mass, and this, in the subsequent manufacturing process, is heated by steam and then well agitated with sulphuric acid to remove the resin which is still present, after which, and running off the resin by a tap, the excess of acid is neutralized with caustic soda or sodium carbonate solution, and the oil thoroughly washed with hot water until all the soda is removed. The material is then decolorized by animal charcoal, the liquid vaseline being stirred up with the charcoal by the aid of steam, and then filtered hot. The only difficulty which is to be overcome in purifying this distillation residue lies in the correct procolorize the hot vaseline contains, of course, iron bar. The camisard is also in use. The phosphate and magnesium phosphate, as hands are tied on his back, and round his well as potassium chloride, sodium chloride neck an iron collar is fastened, which is &c., that it must be washed out with hot attached to an iron bar in the wall. The

Another substitute for bone, celluloid, anything for himself. &c., in some of the industrial arts has been brought to public attention, the substance in this case being milk, its usefulness being exhibited in the form of combs, billiard balls, and the borax incorporated with it by heat, to the residue, while still of the consistency of melted gelatine, there is added one kiloiron, lead, tin, zinc, copper, or other minerals soluble in acid may be used. On the mixture being effected, the solid matter is found separated from the greater portion of the acid and water, and is then drawn off. Next the solid matter is first subjected to great pressure to drive out all possible moisture, and then to evaporation under great heat to remove any remaining moisture. The resulting product, called "lactites," can be moulded into any form, and by admixture of pigments or dyes may be of any desired color.

A most interesting account was given at the Freiburg meeting of the International Conference on degree measurement, concerning a series of simultaneous observations carried on in three different cities-Berlin, Strasburg, and Prague—and which showed progress, at least in Middle Europe, a simifar phenomenon having also been noted at other places in Europe. This, of course implies an alteration in the direction of the earth's axis-that is, the poles and equator, latitude and longitude, are not, as has usually been assumed practically fixed datas. It appears according to this interesting communication to the Conference that the amount of ascertained decrease of latitude at the end of a six months period, as thus noted viz., from August, 1889, to Feb. 1880 was half a second: and it is also stated that the year ending last August, showed an increase | influence of his vice. in latitude amounting to 0.4, or two-fifths of a second. Fluctuation of the axes is thus due, it is remarked, to a minute oscillation, probabls owing to some changes in the internal masy of our planet, and not to be confounded with the precession of the equin- before the wind.

fibres, is a good sign, while a short and ces. Every druggist sells it. blackish fibre indicates badly refined iron, a

a very fine grain also denoting a hard and Too Careless with the English Language. steely iron, which is apt to be cold-short and hard to work with the file. Again, coarse grain with brilliant crystallized fracture and yellow or brown spots, denotes a brittle iron, cold-short, working easily when heated, and welding well. Nitric acid will produce a black spot on steel-the darker the spot the harder the steel-while iron, on the contrary, remains bright if touched with that acid. Good steel in its soft state has a curved fracture and a uniform gray lustre, but in its hard state a dull, silvery, uniform white; again, good steel will bear a white heat without falling to pieces, and will crumble under the hammer at a bright heat, while at a middling heat it may be drawn out under the hammer to a fine point.

## Punishments in the French Army.

The punishments in vogue in the French army are of a very severe nature, more especially when it is considered that the men thus punished are not by any means criminals, but only soldiers who have not behaved so well as they might. These are deported to Algiers under the name of "Camisards," where they are entrolled in the compagnies de discipline. Before embarking, the man has his boots taken from him, which are replaced by sabots, and on arriving at his for every one knew it. "His beauty is destination he receives a uniform of grey marred by the frightful red blotches all over wool and a cap with a large brim.

are all the time under the supervision of away?" non-commissioned officers, who treat their inferiors with the greatest brutality. It is, It hurt his feelings, but he couldn't deny however, the punishments to which the men | she told the truth. He remembered a friend are subjected for the most trifling offences | whose face used to be as bad as his. It had

which must excite indignation. night and day in a hole in the ground with about. "Simply by using Dr. Pierce's perpendicular walls, so that escape is im- Golden Medical Discovery," was the reply. possible. Scorching heat by day and cold | 'Take that, and I'll warrant you to get rid by night, with rations reduced to one quar- of your pimples." ter of their proper quantity, make the very | Verily, courtesy is the sister of charity, common punishment of the gargoule very try- who banishes hatred and cherishes love .ing. The imprisoning of men in the tombeaux, [Fioretti. or regulation tents, which are only fifty cen timetres broad and sixty high, is no rarity; and during their incarceration the prisoners receive no water, nor wine, nor coffee. A little meat and some touillon is their whole nourishment during the day.

incomparably worse off. They are never allowed, under any circumstances, to leave the hole they are kept in either by day or by night. They have no duties or work to pass the time, and only get some warm soup every second day, with a very limited quantity of water daily. This punishment is made | bility, nervousness, sleeplessness, despondstill more severe by putting the man into irons on certain occasions. The delinquent has two iron rings round his ankles, which ore connected by an iron bar rather more than a foot in length, so that his legs form an isosceles triangle with it. He is forced to lie | heavens : but it could make a man blind that down on his face, and then his arms are he might not see it. chained on his back, whereupon he is put into his tombeau. He can only eat his soup like a dog, and if he wants to drink he must seize his bottle with his teeth, and should he let the bottle fall his ration of water is lost for that day.

Any complaints are at once stopped by a portion of soda solution to acid, which must | gag. Only quite recently a punishment was be closely adhered to since an excess of the in use called the crapaudine. The prisoner's | G. T. Fulford & Co., Brockville, Ont. former may emulsify the whole mass. The hands and feet were chained together, and animal charcoal which is employed to de- in this posture he was strung up on to an many inorganic salts, especially calcium soldier is first put into a strait-jacket, his water then with hydrochloric acid, then man has to stand in this position as long as again with hot water, and finally dried. | eight days, unable to lie down, or to do

# Dynamite Experiments.

A recent departure in firing dynamite or brush backs, knife handles, and various other high explosives in a shell and from other articles for which ivory, bone, or an ordinary gun has recently met with celluloid are employed. In accomplishing great success in Manchester, England. Mr. this casein, or the solids in milk, is first J. E. Bott is the inventor. Instead of the reduced to a partially gelatinous condition | cumbersome machinery necessary to furnish by means of borax or ammonia, and then the compressed air to drive the projectile mixed with mineral salt dissolved in acid or Mr. Bott supplies a shell containing highly water, which liquid is subsequently evaporat- compressed air in its rear portion. The ed. The casein is placed in a suitable vessel, gun used is a breech-loader smooth-bore. When the shell is entered the action of firthe proportions being ten kilograms of casein | ing forces a pin inward at the base of the to three of borax, dissolved in six litres of | shell, thus tearing a hole in the retaining water, and, on the casein becoming changed | valve and liberating the compressed air. in appearance, the water is drawn off, and | This drives the shell from the gnn with wonderful force. It does not heat the gun, makes scarcely any noise, produces no gram of mineral salt held in solution of three | smoke and has a much greater range than litres of water. Almost any of the salts of any pneumatic gun yet made, and the absence of fouling enables it to be used continuously.

> Two gentlemen having a difference, one went to the other's door and wrote "Scoundrel" upon it. The other called upon his neighbour, and was answered by a servant that his master was not at home. "No matter," was the reply; "I only wish to return his visit, as he left his name at my door in the morning."

# Charlatans and Quacks

Have long plied their vocation on the suffering pedals of the people. The knife has pared to the quick; caustic applications have tormented the victim of corns until the conviction shaped itself-there's no cure. Putnam's Painless Corn Extractor proves on what slender basis public opinion often rests. that an appreciable decrease in latitude is in If you suffer from corns get the Extractor and you will be satisfied. Sold everywhere.

> For love of money is the disease which renders us most pitiful and groveling, and love of pleasure is that which renders us most despicable. - [Longinus.

> Athletes all over the world chew Adams' Tutti Frutti Gum. Healthful and beneficial and aids digestion. Sold by all Druggists and Confectioners, 5 cents.

or influence affects others, and till the judgment book is opened, no sinner will know Berlin observations, as recorded for the half | the awfulness of his sin, or the widespread

### GIBBONS' TOOTHACHE GUM. Sold by all Druggists.

We must be made fast to something that is fast, if we are not swept like thistledown

We cannot all be first, but T. A. SLO-A writer in the Glasgow Engineer, in CUM of 186 West Adelaide St., Toronto, pointing out some of the most practicable | Ont., must feel more than ordinary pride in data in testing iron and steel, lays down a the success of his valuable preparation for simple rule to start with, namely, that in the cure of lung diseases, viz: SLOCUM'S any case where a fracture of iron gives long, OXYGENIZED EMULSION of PURE silky fibres of a leaden hue, the fibres coher- | COD LIVER OIL. No preparation of the ing and twisting together before breaking, kind has ever met with the same success in It may be considered a tough, soft iron. the same time and the testimonials in its Further, a medium, even grain, mixed with favor are all from the most authentic sour-

A clothing dealer, in Boston, advertised all-wool pantaloons for \$2, advising the public to make haste and secure the great bargain, saying: "They will not last long." Probably they would not. Neither will your health last long if you don't take care of it. Keep Dr. Pierce's Pleasant Pellets in your house. They are indispensable to every family, as they positively cure billiousness, with its endless train of distressing ailments-sick headache, irritability, constipation, dizziness and indigestion; a marvelous specific for liver and kidney troubles, and a pure vegetable compound. They are sugar-coated, the smallest pills made, and the best, because they do all they promise. All druggists sell them, and the proprietors guarantee them, and refund the price if they

He is my friend that helps me, and not he that pities me.

What a pity it is that his face is all pimples; He'd be very fine looking if 'twasn't for that," Said pretty Miss Vere, with a smile at the

Reflected from under the nobby spring hat-As she looked at herself in the glass, softly That she had for the young man a tender re-

There wasn't the least need of denyinghis face. I wonder if he couldn't take some-The men are farmed out to do work, and thing to cleanse his blood, and drive them

He heard what she said about his looks. become smooth and clear. He went to him A common punishment is to keep them and asked how the change had been brought

## The One-hoss Shay.

The peculiar feature of the "one-hoss shay" was, that it was "built in such a wonderful way" that it had no "weakest part." The "weakest part" of a woman is But those who are punished with cells are invariably her back, and "female weaknesses" are only too common. With the use of Dr. Pierce's Favorite Prescription, this may be avoided, and women may be comparatively as strong as their brothers. Prolapsus, inflamation, ulceration, periodical, pains, leucorrhea, dragging-down sensations, deency, are only a few of the symptoms of weakness of the female organs which the "Favorite Prescription" is warranted to

Disease could not make a sun in the

the maladies that go to make life uncomfortable during this month. Through the use of Nasal Balm the sufferer will experience cular. W. P. CORNELL, 131 D'Arcy St. immediate relief and rapid cure. No other remedy equals it for the treatment of hay fever and catarrh. Sold by all dealers or fever and catarrh. Sold by all dealers or sent on receipt of price (50c. and \$1 a bottle).

A. P. 567.

# "How are you?" Nicely, Thank You," "Thank Who?" "Why the inventor of

Give thanks for its discovery. That it does not make you sick when you

take it. Give thanks. That it is three times as efficacious as the old-fashioned cod liver oil.

Give thanks. That it is such a wonderful flesh producer. Give thanks. That it is the best remedy

for Consumption, Scrofula, Bronchitis, Wasting Diseases, Coughs and Colds. Be sure you get the genuine in Salmon color wrapper; sold by all Druggists, at

50c. and \$1.00. SCOTT & BOWNE, Belleville.

DATENTS procured in Canada, U.S. and foreign countries, W. J. GRAHAM, 71 Yonge St., Toronto

precedented facilities for acquiring a thorough knowledge of Cutting, Terms on application. 63 King St. West.

FINORONTO CUTTING SCHOOL offers un-

A AGIC SCALE FOR DRESS CUTTING Taught by Miss Chubb, General Agent for Ontario, 256} Yonge St, Toronto, Ont.

FTO THE FRONT AGAIN. For 20 cents and the address of all the agents you know, we will mail you "Talmage on Palestine," the latest production of the celebrated divine, nearly 200 pages. E. N. Moyer & Co., 60 Yonge Street, Toronto.

ANCER and Tumors cured without the knife, Send for book of treatment and testimonials, free. G.H.McMichael, M. D., 63 Niagara St., Buffalo, N.Y.

THE REST-Business Education to prepare young men and young women for responsible positions is given at the GALT BUSINESS College, Galt Ont. Re-opens Sept. 1st. Circularsfree.

FIREACHERS: TEACHERS! TEACHERS 'Twill pay you to read this. Employment for the holidays is what you no doubt are looking for. Let us give you "a pointer." Write Man can not sin alone; his acts, or words, for terms, &c., of our first class and fast selling books. Every book recommended. WILLIAMBRIGGS, Publisher, Toronto, Ontario

> For Circular Address J. DOAN & SON, 77 Northcote Ave., Toronto

NVFST YOUR SAVINGS. Can. place \$10 or thousands. I'ro. fits, 10 per cent. upwards -to robable 100. Legitimate, conservative, no pwildcat," no gambling. Always safe, some "ases GUARANTEED. MINING. Real Estate, Loans. Fields:—British Columbia, Washington, Missouri. Write, stating class investments preferred. Representing "West Kootenay," "Silver Tip," "Columbia-American," "Western Consolidated." and "North Western Development." Mining Companies. R. C. Development" Mining Companies, B. C., and Marble Cave, Missouri, Address, W. H. LYNCH, offices, Spokane, Wash., U.S.; Toronto, Ottawa and Montreal, Canada.

FAILS.

It is a certain and speedy cure for Cold in the Head and Catarrhin all its SOOTHING, CLEANSING, HEALING.

Instant Relief, Permanent Cure, Failure Impossible. Many so-called diseases are simply symptoms of Catarrh, such as headache, partial deafness, losing end of smell, foul breath, hawking and spitting, nausea, general feeling of debility, etc. If you are troubled with any of these or kindred symptoms, your have Catarrh, and should lose no time in procuring a bottle of Nasal Balm. Be warned in time, neglected cold in head results in Catarrh, folcold in head results in Catarra, followed by consumption and death.

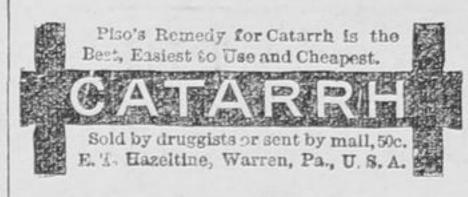
NASAL BALM is sold by all druggists, or will be sent, post paid, on receipt of price (50 cents and \$1.00) by addressing

FULFORD & CO., Brockville, Ont.

CURED TO STAY CURED. dress of every sufferer in the & ASTHMA U. S. and Canada. Address, P. Harold Hayes, M.D., Buffalo, N.Y.

HAMILTON LADIES' COLLEGE and CONSERVATORY OF MUSIC Will re-open on Sept. 7, 1891

The 31st year. Over 300 graduates. Courses in literature, music, art, elecution, bookkeeping, shorthand, typewriting, etc. Music pupils prepared for the Mus. Bac. degree. For terms and Free Catalogue address the Principal. A. BURNS, S. T., D., L. L.D



SIGK AND AFFLICTED, WEAK, NERV-OUS, wretched mortals, should read the HEALTH HELPER. It OUS, wretched mortals, should read the HEALTH HELPER. It tells how to GET WELL. 50c a year, sample copies free. Address

Editor, J. H. DYE, M.D., Buffalo, N. Y. I OMINION PROVIDENT BENEVOLENT AND ENDOWMENT ASSOCIATION. Incorporated July, 1889, R. S. O., Certificates issued with coupons payable every four years, and death benefit, without medical examination. Agents wanted in unrepresented territory. Write at once to head office, Stratford, Ont. (Mention this paper.)

### COMPOUND OXYGEN

Will cure diseases which medicine is unable to reach. It reaches every nerve in the human Hay fever takes a prominent place among | body. It imparts to all the vital forces of the system a new and healthy activity, gives back to nature the powershe has lost, and strength to resist and overcome disease. Send for cir-

FOUNDED 1829.

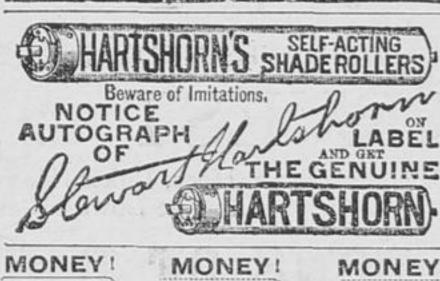
The 62nd session will begin in the new build ings on THURSDAY, SEPTEMBER 16th. Full staff of masters in every departmentthe Classical, the Modern or Scientific and the

Facilities for instruction in Vocal, and Instrumental Music and Drawing in all its branches. For prospectus, giving full information as to erms, etc., apply to THE PRINCIPAL, terms, etc., apply to Upper Canada College.

Send at once for a FREE BOTTLE and a valuable Treatise. This remedy is a sure and radical cure and is perfectly harmless as no injurious drugs are used in its preparation. I will warrant it to cure EPILEPSY OR FALLING SICKNESS In severe cases where other remedies have failed. My reason for sending a free bottle is: I want the

mendation. It costs you nothing for a trial, and a radical cure is certain. Give Express and M. Q. ROOT M. C., 186 West Adelaide St

Torento, Ont.



MONEY! MONEY LONDON AND CANADIAN

LOAN AND AGENCY CO., LIMITED

103 Bay Street, Toro nti. Capital.....\$5,000

Money to Loan on improved farms, city and town property on liberal terms of repay-

ment and AT LOWEST CURRENT RATES MUNI-CIPAL DEBENTURES PURCHASED. Apply to local appraisers or to J. F. KIRK, Manager.

Choice farms for sale in Ont. & Manitoba.

## MOTBERS

ask for and see that you get Dawson's Chocolate Creams The Great Worm Remedy. Sold by all druggists. 25 cents a box.

FINELY

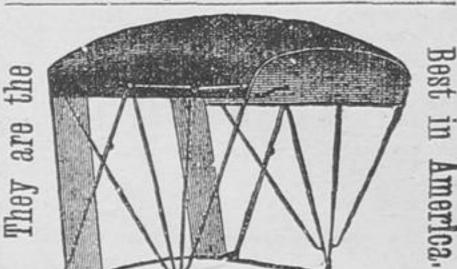
# MACDONALD MANUFACTURING CO'Y,

231 King Street East, Toronto.

WHOLESALE TOBACCONISTS MONTREAL,

Manufacturers of all kinds Domestic Cigars. including

Celebrated Crusader and Hero Brand One trial 's a guarantee for continual nee



Get a Conboy Top on your Buggy. They have eight patented improvements, not in any other

## MAN'S WONDERFUL NETWORK.



As oil lights up the ebbing flames, as fresh fuel replaces the dead TUES HATH ST. LEON WATER, POWERFUL BEYOND COMPARI SON, to electrify, to support, and assist that WONDERFUL NET-WORK, the NERVES, through which alone building and repairing of the body is carried on and health and strength flows. To all who drink St. Leon comes such health and pleasure as never before known.

HEAD OFFICE-1013 King St. West. BRANCH Tidy's Yonge St.



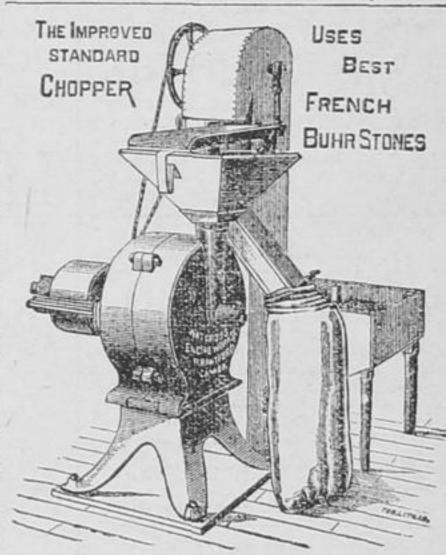
From all Stations in Ontario Return Rates to

METHVEN HARTNEY DELORAINE MOOSOMIN BINSCARTH REGINA MOOSEJAW \$30.00 CALGARY PRINCE ALBT

Toleave all points in the Province of Ontario on Return until September 27, 1891 SEPTEMBER IST, Return until October 10, 1891

Parties ticketing from other points should arrange to arrive at Toronto in time to connect with the 11 p.m. train leaving August 11th. 18th, September 1st, 1891.

For full information apply to any Ticket agent of the Canadian Pacific Railway.



Send postal for new Circular for Season 1891. Waterous Engine Works Co., Brantford, Canada.

TO THE EDITOR-Please inform your readers that I have a positive remedy for the above named disease. By its timely use thousands of hopeless cases have been permanently cured. I shall be glad to send two bottles of my remedy FREE to any of your readers who have consumption if they will send me their Post Office Address. Respectfully, T. A. SLOCUM, M. C. 186 West Adelaide St., Toronto, Ont



# THE ost Delicately Perfumed

SOLD EVERYWHERE,

USED BY EVERYBODY.

AND WADE BY