EXPERTS ACCOMPLISH GREAT WORK.

A writer in an English paper gives brief notes on a few of the greater engineering works which have been quite recently completed, or which are actually in progress, with every prospect of their being successfully completed in due course.

To begin at home, the great tower, which owes its origin to the energies of Sir E. W. Watkin, M. P., deserves first place, as a worthy rival to the great Eiffel tower, the engineering boast of France. This tower, which is being erected at Wembly park, where a special station has been already opened, fourteen minutes from Baker street station, is being actively pushed forward. The foundation work has been completed, and the laying out of the grounds is so far advanced that it is expected the park, which covers 180 acres, will be opened in the spring. The foundations are composed of huge concrete blocks, which mit power electrically to any desired point. vary in depth from twenty-eight feet to sixty feet, according to the level of the

The tower itself will measure 960 feet in circumference at the base, and 1100 feet in height, or 150 feet higher than the Eiffel, while it will be larger than its prototype in every way. The material destined for its erection is polished steel. The summit will be 1450 feet above sea level. The tower itself is expected to take eighteen months to build.

The tower bridge is another great London engineering venture which is rapidly approaching completion, although the final date of opening for traffic has had to be shifted forward several times. This bridge, presents a novel feature in the centre span, which is 200 feet wide and cut in halves, which are to be raised and brought flush but of the skins of young colts. The cheapwithin them.

When opened for passage of vessels, foot passengers may cross by a lofty footpath, to which access is obtained by staircases and lifts within the towers. These immense! piers in the bed of the river are said to be the largest in the world.

is 2,640 feet. About 31,000,000 bricks, 19,-500 tons of cement, 70,500 cubic yards of concrete and 15,000 tons of iron and steel Bath, Me., must be as strong as a quartzwill be utilized in the structure.

When the great Siberian railway chainat present being constructed—is finished, chimneys and crockery. Russia can boast of possessing the greatest railway in the world. This tremendous caught by three boys in Eastern Oregon, system will stretch right across the im- during a snow-storm, and sold for \$10 a mense territory of Siberia, no less than pair. The snow settled on the birds' tails, 4,785 miles, or twice the length of the preventing them from flying. Canadian Pacific railway; and the total cost, inclusive of rolling stock, etc., is given at £36,765,000 or £7,680 per mile.

nature of the ground for engineering opera- | very fond of children." tions, and the absence of huge parliamentary expenses and compulsory purchase of latest London freak. On his head he puts land, which have in our country made railways so costly. The first sod of the huge undertaking was cut by the Czar at Vladivostock, May 24, 1891.

On the eastern section as many as 12,000 men are employed, and part of the line has been already opened for traffic.

On the opposite side of the globe the Trans-Andine railway in South America deserves mention, owing to the tremendous engineering problems to be solved in crossing the mountain chain forming the backbone of the continent.

Of this railway, begun 20 years ago, and tic to Valparaiso on the Pacific-a stretch den jar cured his lameness. of 870 miles—only the completing section in the heart of the Andes is unfinished. The Andes are crossed by the Cumbre Pass, 13, 045 feet above sea level.

three mile tunnel, and altogether smong his twenty-seventh year. the mountains there are five tunnels, with a total length of over ten miles, while in the mountain section the locomotives, for 65 miles have toothed wheels to work on the rack system when necessary to surmount the years. heavier gradients.

tunnel in the heights of the Andes is quite provided the weight be so placed as to a different matter from te s ame work performed at ordinary levels in settled countries.

climatized to the rarified air, and this dif- | sheep. ficulty is forcibly exemplified in the case of that being bored through the Peruvian Andes near Galeria. This is the highest village in the vorld, 15,635 feet above the sea, or only 100 feet lower than the summit of Mont Blanc.

Near this village a tunnel, 2,847 feet long, is being bored through the summit of the mountain, 600 feet above the line of perpetual snow. This certainly may take rank as one of the most extraordinary of railway engineering enterprises.

The Alps have been tunnelled through so frequently that the proposal to bore them once more, this time below the famed Simplon pass, causes no surprise, though this tunnel will be the longest of the lot-121 miles in all, about three miles longer than the St. Gotdard tunnel.

This tunnel, which is estimated to cost 100,000,000 francs, will present a novel feature, being single with double railway track in its northern half, while the southern half will consist of two parallel tunnels, each with a single track, this arrangement being adopted with a view to improving the

ventilation. There is, however, another proposal to sent for, and it bumped the train free. cross the Simplon pass (6,500 feet high) by a railway, the steepest section of which would be built on the cog-wheel system, with a tunnel five miles long, costing in all 30,-000,000 francs.

The highest mountain railway in Europe is the Brienzer Rothhombahn railway, which was opened in November, 1891 and ascends to a height of 5,606 feet at the summit level. The journey is performed in 11 hours, and the steepest gradient is one in four.

It is purely a rack and pinion line throughout, and is further remarkable for the short time in which it was constructed | ties and colleges, with 1,127 professors, having been begun in October, 1890. Thus in little over a year this was finished, though the work necessitated the boring of 10 tunnels, the bridging of several streamlets, and the building of heavy stone dams.

that up Pike's Peak in Colorado, which was and lives elsewhere till she deserts hi, mond in the summer of 1891. This line, home.

nine miles long, climbs to a height of 14,147 feet above the sea level, with a maximum gradient of one in four. This is also a rack rail line; there also difficulty was experienced in the higher portions from the rarity of the air.

There is a mountain railway in the Catskill mountains, New York state, 7,000 feet long, which is worked by cable driven by a drum at the summit, where the steam

engines are placed. The works in progress for the utilization of the immense power continually running to waste at Niagara are rapidly approaching completion, and these have been described as but the beginning of perhaps the most stupendous engineering feat ever undertaken. The great tunnel has just been finished.

This, which is 6700 feet long, 28 feet high and 18 feet wide, runs from the bottom of a great shaft 140 feet deep, to which the water is brought from above the falls by a large canal, and running parellel with the river empties itself below the cliffs under the suspension bridge, after having set in motion the series of great turbines which are intended to work the dynamos to trans-

Only 150,000 horse power of the 17,600,-000 which it is calculated the falls can supply will be absorbed by the Cataract Construction Company's works. It is intended to sell power at the rate of \$20 per horse power per annum up to 3,000 horsepower; for powers beyond the charge will be \$10 per horse-power.

ITEMS OF INTEREST.

Most sheep die before they are a year old A very fine Stradivarius violin will fetch

The prices of medicines are fixed by law which is built on the "bascule" principle, in Prussia, and a new price list is annually Just then the minister says, says he, issued. "And now I've come to the fellers

The best kid gloves are not made of kid, with the towers by machinery concealed est kid gloves are made of lamb and rat

> Dwarfs are the inhabitants of the Andaman Islands. It is seldom that a full-grown man is seen over forty-two inches in height.

Rosewood is so called because when first cut it inhales a perfume like that of a rose. The total length of bridge and approaches Roses never grow upon the tree which pro-

The digestive organs of a hackman in crusher. He eats eggs with the shells on, and occasionally chews up and eats lamp

Three dozen of Chinese pheasants were

A dog with a dangerous appetite is referred to in the following advertisement, from an English paper : "For sale-A bull This very low cost is due to the favorable | terrier, two years old. Will eat anything ;

> "The man with the iron skull" is the a block of wood, and on this a granite rock. She dwells for aye, my little maid," He permits anybody to crack the rock with a sledge hammer, while is rests on his skull.

The chimney of a glass-house in Liverpool is 105 feet high, formed entirely of glass bricks. The floors and roof are of glass; She treads the City's wondrous street. and even the journal boxes, in which the machinery revolves, are of the same transparent material.

Several months ago, John Wilson, of Pittsburgh, Pa., dislocated his hip, and several doctors failed to relieve him. While alighting from a street-car the other day, reaching from Buenos Ayres, on the Atlan- he slipped and fell on the ice, and the sud-

Mrs. Yates, of Springfield, Ohio, is the Forever, in the higher place. mother of twenty-four children. Among them are five sets twins. She was married at | Too true! Down here the years roll on, the age of fourteen; her youngest child is Of this altitude 2,000 feet are cut off by a only a few weeks old, and her eldest is in She beareth yet—his little one—

> German dentists now make false teeth of | A very blameless little one. paper. They are said to be a very natural I took the picture up again; imitation of the real article and last for

Experiment has shown that a "Yankee Too free from sin-too free from tears. It may well be imagined that driving a pumpkin" will lift two and one half-tons, interfere with the growth of the vegetable.

The largest sheep ranch in the world is in the counties of Dimmet and Webb, Texas. The workmen, even though accustomed It contains upward of 400,000 acres and For many and for many a year." to living at great elevations, have to be ac- yearly pastures from 1,000,000 to 1,600,000

The settlers on the Quillayute prairies, Speak to us of the Fatherland.
Washington, are afforded fine sport in To light life's eventide! the loftiest railway tunne! in the world, in Washington, are afforded fine sport in thousands of wild geese that come there in the fall and make the region their winter

It is not an easy matter to freeze out trichinæ. After subjection to a temperature of 25 degrees below zero for two hours they again become active when exposed to light and heat.

Dr. Carver relates the story of a pavingstone weighing eighty-three pounds, which was raised from its bed (when joined on all four sides by other stones) by such a soft substance as a common "puff-ball" mush-

A Parkersburg, Va., musician has just perfected and patented a novel musical instrument, which he calls a "key zither." It is simply a zither played with keys, but it is said to be a revelation in the way of a musical instrument.

A train stopped near Gibson, Ill., to take water. The fluid overflowed the locomotive tender, and froze the engine fast to the track. It was four hours before the train could be budged. A new locomotive was

The horseshoe superstition has been considerably modified in the mind of a St. Louis man. He found a horseshoe, and nailed it over the door. A week after, as he was entering the house, lightning passed through the horseshoe and knocked him

The United States contain 300 universities and colleges, with 4,240 professors, and 69,400 students; Germany has 21 universities, with 1,020 professors, and 25,-084 students ; Great Britain has 71 universi- Across thy bosom white-sails speed, and 54,234 students.

All the courting is done by the women in the Ukraine, Russia. When a woman discovers a man she would like to marry, she visits him at his house, and tries to charm Another remarkable mountain railway is him. If he does not like her, he leaves hers

POETRY.

Our Minister.

The minister said, said he, Don't be afraid of giving; If your life ain't no use to somebody else,
Why, what's the use of living?
There's Brown, the miserable sinner, He'd sooner a begger would starve than give A cent toward buyin' a dinner.

I tell you our minister's prime he is, But I couldn't quite determine, When I heard him a givin' it right and left, Just who was hit by the sermon.

Of course there could be no mistake

When he talked of long-winded prayin', For Peters and Johnson sat and scowled At every word he was sayin'.

And the minister he went on to say: "There's various kinds of cheatin', And religion's as good for every day
As 'tis to bring to meetin'.
I don't think much of a man that gives
The Lord amens at my preachin'
And spends his time the followin' week In cheatin' and over reachin',"

I guess that dose was bitter enough For a man like Jones to swaller; But I noticed he didn't open his mouth Not once after that to holler.
Hurrah! says I, for the minister—
Of course I said it quiet—
Give us some more of this open talk; It's very refreshing diet.

The minister hit it every time, And we en he spoke of fashion, And a-riggin' out in bows and things, As woman's ruling passion, And a comin' to caucea to see the styles, I couldn't help a-winkin' And a-nud'gin' gury write, and says I, "That's

Says I to myself, "That sermon's pat." But man is a queer creation, And I'm much atraid that most o' the folks Won't take the application, Now if he had said a word about My personal mode o' sinnin' I'd have gone to work to right myself, And not set there a-grinnin'.

I guess that set her thinkin',

Who've lost this shower by usin' their friends As sort o' moral umbrelias. Go home," ays he, and find your faults, Instead o' huntin' your brother's; Go nome," he says "and wear the coats You've tried to fit for others."

My wife she nudged, and Brown he winked, And there was lots o' smilin', And lots o' lookin' at our pew; It set my blood to bilin'. Says I to myself, our minister Isgittin' a little bitter; I'll tell him when meetin's out that I

Safely Garnered.

Was she your only child?" asked I. " My only one," the answer brief; And yet he spoke without a sigh. Without a touch of grief. He said the words with quiet smile. I paused, and wondered for a while.

Ain't at all that kind of a critter.

I marveled at that quiet tone, In which no shade of sorrow lay; And thought of darlings of my own, Of laughing faces gay. And yet not one amongst all there, Not one, I fe.t, that I could spare.

You need not grieve for me," said he; "Your little ones are not more blessed; This darling child, so dear to me, Has entered into rest,

I saw him raise his eyes and hand Up to the quiet summer skies— Up to the sinless, better land, To where his treasure lies. Where with untiring, little feet,

'Your little ones," he still went on, May live to feel life's toil and care; But where my little child has gone, Thank God, no pain is there! No shade to dim the starry eyes, In the deep calm of Paradise.

Your little ones will older grow. But she is still the little thing She'll bear the dear and changless face."

'The coming years will changes bring;

And hearts grow hardened and defiled, The pure heart of a child, No deeds that he need wish undone;

Too fair, too fair, those childish eyes, To dim and sorrow with the pain That in this old world lies. To shadow with the toil of years.

We strive and argue here below Of mysteries beyond our ken; But she, my little maid, doth know The things that puzzle men.

O child, whose feet have touched that strand Beyond the river's restiess tide, To guide us where thy feet have trod, Up to the unknown home of God.

-[Ladies' Home Journal.

Lake Ontario.

Deep roll thy waves, Ontario, White crested, angry, wild, They dash upon thy pebbled shore, Defiance in their sullen roar; Old ocean's land-locked child. Ontario!

Low hang the storm-clouds o'er thy breast Black curtains of the sky, Till rent with lightning's vivid flash, The winds, let loose, the waters lash And toss the white spray high. Ontario!

Amid the strife of wind and wave The rain comes rushing down, And adds its ceaseless, hissing sound To swell the tumult all around And weaker wailings drown. Ontario!

Like some rebellious spirit thou, With Discontent enthroned Within thy heart, or is the source Of all this fury wild remorse, For sin to be atoned? Ontario!

For 'neath thy waves, Ontario, Dark secrets surely rest; Thy curling, foam-capped billows flow, Above deep mysteries hid below. And yet to be confessed. Ontario!

Now calm thy waves, Ontario, No storm-winds round thee rave; Upon thy sunlit, azure breast The wild bird, weary, stops to rest And dip its pinion in thy wave. Ontario!

Fair messengers of trade; And on the breeze the sailor's song Comes merrily, yeehoe-ho, along, To cheer the blythe milkmaid. Ontario!

A sail, a skiff, a cloud of smoke That marks a steamer's way, A lumber raft with hardy crew That bravely, surely steer it through I see this summer day.

Ontario!

In days long past, Ontario, The Mohawk's bare canoe, Freighted with tomahawk and knife, To take the hated Iroquois life,

Oft crossed thy waters blue. Ontario! Now peace and plenty bless thy shore, And stately homes appear When dusky wigwam shelters strove To hide within the forest grove,

Ontario! The moon a silvery pathway lights Across thy darkening waste, The cedar perfumed breezes blow, The laughing streamlets gaily flow To thee, to thee in haste. Ontario!

Where roamed the antiered deer.

The dainty tints of breaking day First tinge thy cold, grey wave; The gorgeous setting sun at eve Its glowing colors stoops to leave Upon thy flashing wave. Ontario!

O changeful lake, thou art ever fair In storm, in calm, at eve; But oh! I think I love thee best Whon storm-winds roar above thy breast, Thy wild waves surge and heave. Ontario!

The veil of night is thickening fast; I strive the pierce the gloom That hangs upon thee, lovely lake, A parting look of thee to take, While deep regrets consume. Ontario!

K. DOLORES O'BRIEN.

Obligation.

If ever some pure-hearted one should give Responsive look, for gentle glance of thine, Forget it not, as long as thou shalt live;

But, in thy heart of heart, enshrine!

Should ever some congenial spirit say A tender word, in friendship's garden grown, Oh, let it not, as frosted flowers, decay; But be as amaranthine crown!

If ever some unselfish one should do An act of kindness, in thy time of need, Within thy mem'ry, faithfully renew The fragrant incense of the deed!

Should ever some angelic woman trust The treasures of her coming years to thee, Let not her hopes be trodden in the dust; But loyal to thy promise be!

E. R. L.

WORK WEARISOME AND FINE.

The Japanese Women Labor Many Hours on Delicate Embroideries.

More than once during the last few years allusion has been made to the severe labor performed by young people in Japan. It may probably be said with truth that toil of this unremitting character is a feature of Japan's new civilization. In one branch, at any rate, such is the case. We allude to the embroidery and hemming of handkerchiefs. Young girls may be seen occupied in this manner from early dawn to late evening. They sit crowded together, generally under very unsanitary conditions, and always with inadequate provisions of became an accomplished fact at the Coallight. Match-making is another trade brookdale iron works in Shropshire. The which furnishes similar examples.

It is stated, on authority commanding shire coal, but probably the employment of trust, that children in match factories in a strong blast had a great deal to do with Kobe work from 3 A.M. to 7 P.M., with it. From this the coal became the life of only two recesses of thirty minutes each. the iron manufacture. The ci-devant droop-The thought of such hardship is terrible, in- ing trade rapidly revived, and the latter volving as it does results that must be felt part of the eighteenth century saw coal iron by the next generation as well as this. We furnaces in successful operation throughout do not know how it fared with the artisan | the kingdom. in Old Japan. Probably he had to suffer hardships enough after the fashion of the time. But there were no factories in those days, neither was there any tyranny of competition, such as has been inaugurated by contact with the West. The new civilization brings with it new problems, and they have to be faced. We have as little faith labor question has not yet come before the stamps of Canada, which, he said, like those Japanese public in a definite form.

respite from toil.

Emigration to Canada.

The emigration to Canada was larger last year than usual, and the area of land settled on is greatly in excess of that of previous years. A remarkable feature of last year's immigration was the settlement in Manitoba farmers from the Western States of America, who had been attracted by the fertility of the soil, and the excellent crops the farmers have secured during the last two years. The Canadian Government offer very liberal attractions in the shape of free grants of land in Manitoba, the North-West Territories, and British Columbia, and they also give money bonuses to families or individuals taking up land in those provinces within eighteen months of their arrival. All over the Dominion, however, land can be obtained on very favorable terms. The classes in demand are those with capital, farmers, farm labourers, and female domestic servants, while skilled mechanics and others who have friends in the country, or who are assured of work on their arrival, may go with safety. Persons who are contemplating emigration cannot do better than consult the Government pamphlets, issued from the Emigration Bureau, Broadway, Westminster, and the Canadian Government agents. - [Spare Moments.

Three-quarters of a second is the time occupied by the fall of a knife in the guillotine. The knife is weighted by 120 lbs. of lead, falls 9 feet, and cuts through flesh and bones as easily as through a bar of

Some of the native women of Australia have a queer idea of beauty. They cut themselves with shells, keep the wounds open for a long time, and when they heal huge scars are the result. These scars are

deemed highly ornamental. Paper money has been shown to contain disease germs to an extent not at all reassuring just now. An examination of two Cuban notes revealed that they contained more than 19,000 germs of various kinds.

WHEN COAL WAS FIRST USED.

Heard Of as Fuel as Far Back as 1656-Preceded by Wood and Charcoal.

Though coal had been employed for centuries in the manufacture of salt on the shores of the coal fields, wood had hitherto continued to be the fuel at the inland salt works. The use of coal at Nantwich is mentioned as a novelty in 1656; and according to the Contemporary Review, at Droitwich wood fuel and leaden pans were in use up till 1691. In this era the sea salt manufacture was in the zenith of it prosperity. But the substitution of coal for wood in the inland salt trade, aided by the discovery of rock salt, which took place accidentally in boring for coal in Cheshire, 1870, led to the gradual decline and final extinction of the manufacture of salt on the coast. The only traces now remaining of this once flourished industry exist in such names as How-loapaus on the Tyne, Prestonpans on the Forth, Saltcoats in Ayreshire and Saltpans in Arran and Kintyre, or in the Scotish proverb, "Carry salt to Dysart," synonymous with the English "Carry coal to Newcastle." In no branch of industry was the scarcity of wood more keenly felt than in the smelting of metalliferous ores. Continued efforts to accomplish this with coal began immediately after the accession of James I. and we persevered in throughout the seventeenth century. But for a long peroid the new fuel proved highly intractable, and scheme after scheme ended in failure and disappoint-

After eighty years of oft-repeated trials the tantalizing problem remained unsolved. Wood and charcoal still held the fill in the smelting furnace and all hope of ever seeing coal substituted for them had well nigh died out. In 1686 Sir John Pettus, in his "Essays on Words Metallick," concluded his observations regarding sea coal and pit coal with the remark : "These are not useful to metals." The unpromising prospects, however, soon began to brighten. Immediately after the revival of lead and copper mining, which took place about 1692 -having probably been more or less in abeyance since the interruptions occasioned by the civil wars, when

The fisher left his skiff to rock On Tamar's glittering waves; The rugged miners rushed to war From Mendip's sunless caves.

-these ores came to be smelted with coal. The extraction of silver from lead with coal was accomplished by a Mr. Lydal in 1697, and the same individual appears to have been the first to successfully employ coal in the smelting of tin, in 1705. The ores of iron proved more refractory, no substantial and permanent success in smelting them with coal being obtained till near the middle of the eighteenth century, when the manufacture of charcoal iron had dwindled to very small proportions-in fact, was dying out for want of fuel. It then at length success was at first ascribed to the Shrop-

CANADA'S POSTAGE STAMPS.

Collectors in England Who Admire the Designs.

The President of the Leeds Philatelic as any in official interference. Besides, this | Society at a recent meeting described the of the other British North American colon-That there are excessive pain and suffer. ies, are all very handsome in design and exing among some sections of the population | quisite in workmanship. The first issue of is perhaps understood vaguely by many three values, was in April, 1851. The deobservers. There has not yet, however, signs were a Beaver for the 3d. value, a been any audible remonstrance from the portrait of Prince Albert for the 6d., and workers themselves. They submit to their one of the Queen for a stamp which was toil quietly and ancomplainingly. We given as of the value of "twelve pence," hear of hand silk-reelers in Joshu, who be- which is probably a unique instance of a gin their day at 4 p.m, and end it at 1 a.m. | shilling being so denominated. The second For them the toil of one day is carried issue consisted of the same three stamps on into the next. But that is an exceptional different paper. In 1855 a 10d. stamp was effort, made for a season only, and does brought into use, bearing the portrait of not continue all the year round, as is the Jaques Cartier, who first explored the St. case in the factory. Comparable with it Lawrence, so naming that splendid river is the toil of the tea-house waiting girl. from having entered it on St. Lawrence's The story of her daily life is almost incred- Day. In 1857 a couple of new values were ible. Rising with the first streak of day- added-71d. and 1d.-with Queen's heads light, she cannot rest until the last quest of different types for the central has ceased from his carousals. Three or design. In the same year the 1d., four hours of sleep representing her entire | 3d., and 6d. were issued perforated. On the 1st of July, 1859, a radical change occurred in the currency of the Colony, which adopt-

ed dollars and cents in lieu of shillings and pence, and the stamps were issued of the same designs as before, with but slight alterations, to conform to the new coinage, the "twelve pence" being discarded altogether. A 2-cent value was added in 1864. In 1868 the whole set was superseded by a and the North-West of a large number of new series of handsome stamps of large size and uniform design, intended for use not merely in one colony as the previous stamps had been, but for the whole Canadian Dominion, formed by the union of Canada, New Brunswick, and Nova Scotia in the first instance, and afterwards of British Columbia, Manitoba, and Prince Edward Island. In 1870 these large stamps were replaced by new ones of practically the same design, but smaller and more convenient in size, which are still in use, with one or two additional values .- All the members present, with a single exception, showed their collections of Canadian stamps, Mr. Beckwith's own series being not far from complete.

149 Birds at One Shot.

During the recent severe weather in Scotland a very extraordinary shot was made by Sir Charles Ross's puntsman. A large number of birds were seen sitting on the ice, and the puntsman succeeded in getting within about sixty yards of them. Some of the birds rose as the gun was fired, but the total number killed by the discharge was 149: they included several species, but the majority were plover. The gun was 12 inches in bore, and the charge 4 ounces of powder and 14 ounces of No. 3 shot. The shot was doubtless rendered much more destructive than it would otherwise have been, owing to the pellets skidding along on the flat surface of the ice.

The latest English idea in insuring the lives of customers is embodied in an "in" surance " corset. With each corset sold is presented a coupon, insuring according to the value of the article, the purchaser for £25, £50, or £100, against death by accident.