

Science and Invention

The light which comes to us from the sun in eight minutes might journey ten thousand billion years and not reach the borderland of the universe. It has no limit. It can have none. Yet the same laws rule it throughout. And every force, all power within it, all the laws that govern it, work for harmony and happiness.

A French scientist, Jean Berthier, has worked out in detail the plans for a railroad tunnel under the Straits of Gibraltar. He would run it from a point in Spain near Gibraltar to Tangier, in Morocco, the total length, including approaches, being 25 miles, of which 20 miles would be under the sea. The estimated cost is under \$25,000,000.

Prof. C. E. Bessey announces in a letter to Science that he has obtained evidence that trees, including such species as oak, hickory, yellow, cottonwood, elm and box elder, are rapidly advancing in eastern Nebraska. The areas covered by them are gradually creeping up the courses of the streams and spreading out laterally. In some cases the "trees" along rivers have within twenty-five years, increased in width from 100 feet to half a mile, and even a mile.

Prof. Arthur Thompson, in Knowledge, deals with the form of skulls and brain capacity. The average weight of a man's brain is about 50 ounces, that of a woman about 45 ounces. This difference between the sexes is less marked in savage than in civilized races, and is apparently explained by the fact that in the higher races more attention is paid to the education of the male than the female, and consequently the brain is stimulated to increased growth.

An ingenious Frenchman, M. Louis Levat, recently administered alcohol, through the soil, to a geranium plant, for the purpose of observing the effect. It was sufficiently startling. The leaves of the geranium began to turn yellow and gave off a peculiar ethereal odor, symptoms of poisoning appeared, the roots turned black and seemed to have been burnt, the leaves drooped toward the earth, and in four days the alcoholized geranium, which had been a very beautiful plant, was a tottering wreck.

The Arctic Ocean, says Nansen, is a kind of liquid, separated from the Atlantic by a strait, and is not frozen from Spitzbergen to Greenland. To this ridge is due a curious condition. The Arctic is covered with a layer of slightly salt water from the Siberian rivers and Behring Strait, and under this is the normally salt Gulf Stream water. If the two layers were mixed, the average temperature would fall, but this average would not be as cold as the surface layer. This accounts for the enormous formation of polar ice.

There is a little bird in Costa Rica, a pretty black and orange oriole, who is an expert in needlecraft. Having no clothes upon which to exercise her skill she turns her talent to account in home-making. Selecting a large, fresh-growing banana leaf, she carefully sews the two pieces together with her bill for the needle, and some strong grass or rootlets for the thread. She even follows the grain of the leaf close by one of the veins, and so neatly are the stitches made that only the closest examination reveals the work. Inside the pocket is built a nest of soft grass or hair, and here the mother bird lays her dainty eggs and raises her family without fear of discovery.

UNDER FALSE PRETENSES.

Why Apache Bill Left the Theater
"Back in the early '80s," said an old-time showman, chatting with the New Orleans Times-Democrat man, "I got a job as manager of a typical western variety theater at Cantonment, and I didn't exactly relish the situation, but I had been stranded out there by the failure of a road company and it was a case of Hobson's choice. Carbonate was on the boom at the time and the population consisted of the usual collection of miners, adventurers, gamblers, Eastern tenderfeet and miscellaneous frontier transients.

"Our house was a favorite resort of the town and was packed to the doors every performance, but one night I had off with remarkable smoothness until one night about a week after I had taken charge, when a half-drunk ruffian down near the front began to create a disturbance. He started in by giving the performers a good thrashing, and then he badly demoralized that the show was virtually at a standstill.

"Meanwhile I had taken a look at the fellow from one of the boxes and saw, to my consternation, that he was a noted 'bad man,' known as Apache Bill, who was then the acknowledged bully of the camp, and who had won his social position by 'shooting up' a couple of deputy sheriffs and chasing his predecessor over the range.

CUBAN TIMBER IS THREATENED.

Greedy Lumbermen May Despoil the Island's Valuable Forests.
Gen. Bland, Secretary of Agriculture in Cuba, has made an appeal for the preservation of the forests of the island. Under the American rule, they stand a chance of being treated with the same injurious indifference that has robbed this country of a great source of wealth and left large tracts denuded of vegetation, and most important of all, the water ways without the protection that kept them from running dry at one season of the year and flooding to the danger point at another. The valuable mahogany groves of Cuba can be continued forever as a

steady source of income for the island, or they can be allowed to be wiped out on one fell swoop of the lumber dealer. He is reported to be already in Cuba, preparing to make to the owners of the forests tempting offers of a little money so much needed that the natives will be apt to overlook the value of their future advantage. A few sawmills erected, railroads built and the means of getting the lumber to the sea provided, and it will all over with the Cuban forests, while an ounce of protection for them will save the young trees and cause an intelligent care of new plantations and preserve to the islands one of its best means of revenue.

It is marvelous how rapidly a wood can disappear and be lost to even memory. An English traveler in this country not many years since, in writing of a part of Connecticut where the forest is now practically unknown, spoke of the "everlasting forest, from which in America we cannot fly. I cannot remember that, except in some part of the prairies, I was ever out of sight of the forests in the United States, and am sure I never wished to be so. It was like the "ferocious wall of paradise," confining the mighty southern and western rivers to their channels. We were, as it appeared, imprisoned in the forest, and as we traversed the Southern States, we threaded it in Michigan; we skirted it in New York and Pennsylvania; and through-out New England it bounded every landscape.

Looking at it in a wholly utilitarian spirit, the mind reverts to the property loss to the country in letting these magnificent woods be the prey of the greed of the lumberman, who has cut with-out knowledge or pity, stamping out behind him all the forest wealth as he goes on his devastating career, cutting right and left, without a care for the coming years. If forestry had not for so long been made a science in Europe we could have an excuse, but there is only heedlessness and greed that can account for what has been done.—New York News.

UNIQUE WATCH FROM PARIS.

Kansas City Man the Owner of a Valuable Timepiece.
W. B. Clarke, president of the United States Trust Company, is the recipient of a unique and valuable present from a Paris banker friend, says the Kansas City Journal. It is a large yet delicate watch, which not only is a chronometer, but it also tells the month, the days of the month and the moon's phase. The case is of metal highly polished, and is of the "open-face" variety. It is about three inches in diameter, with a very heavy crystal.

The works of the finest Swiss watches have gone into the making of this timepiece. The watch is about three times as heavy as the ordinary large American watch. It is not intended, of course, that the possessor will ever carry it in his pocket, but with it is a beautiful bracelet case with a bracket leg that when the watch is in its case it resembles a small clock, the face being exposed. It is intended as a desk chronometer, yet it is too valuable a piece of bric-a-brac to be left lying around.

When Mr. Clarke was in Paris on one of his European trips he had the misfortune to lose his watch, a very valuable one, and one day in a company of Paris bankers, all of whom he knew very well, he related the circumstances of its loss. Nothing more was thought of the matter until Mr. Clarke received a letter the day before Christmas notifying him that the watch had been forwarded. It adds to the interest of the present that so good a timekeeper is it that it did not lose an hour on its long trip from Paris and arrived as promptly as though it had been forwarded by messenger from a shop in Kansas City.

Wasted Sympathy
She is a charming widow, pretty, bright and light hearted. She was a charming young woman before she married Mr. Blank, and moved away to live in Georgia. Her married life was most happy, and at the death of her husband was a great loss to her, but she bore up under it. After the funeral and a general packing up of things she returned to her old home. The day after she arrived she was met on the street by one of her very man-faced friends who intended to give her a cluster of that sympathy that makes one feel as if the sympathizer had thrown something at and on the "sympathizer."

"Mrs. Blank," said the solemn one, "I am so glad you are so well."
"Yes, answered the widow, "I am as well as can be. I was never ill in my life, you know."
"And, Mrs. Blank," continued the solemn one in solemn tones, "I'm glad to see you so happy."
"Why, yes, I'm very happy. You know it was not I that died. It was Mr. Blank."—Merrill Scimitar.

An Ai Rhyme.
There was a noted LL. D.,
Belonging to the F. E. V.,
A member of the G. O. U.,
Whose son was in the U. S. V.
I'd sold the son things f. o. b.,
I'd bought 'em ship them c. o. d.,
But sent a letter, "R. S. V. P."
He hadn't paid a single son—
I then decided what I'd do,
I wrote: "I hold your I. O. U.,
Will see your father p. d. q."

VIADUCT TO BE TAKEN DOWN.

Immense Work of Engineering in Pennsylvania Will Be Destroyed.
It is authoritatively stated that the famous Kinzua viaduct, the gigantic iron girder and trestle bridge in McKean County, Pennsylvania, south of Bradford, is to be replaced at an early date by a new and wholly different structure. Work on it was begun on May 5, 1882, and it was completed and opened for traffic less than four months later, on Aug. 29, 1882. It is 301 feet high at the highest point and until the completion of the Garabit viaduct was the highest bridge in the world. The Garabit spans 1,840 feet long and at the highest point the rail level is 401 feet above the river. It was designed by M. Eiffel, builder of the famous tower, and was completed in 1884. The Kinzua bridge is 2,000 feet long. Its completion gave to the New York, Lake Erie and Western Railroad direct communication with the coal fields of Western Pennsylvania. The Buffalo, Rochester and Pittsburgh has a traffic arrangement with the Erie for the use of the bridge. The valley of the Kinzua, which this great trestle spans, is fifteen miles south of Bradford and one of the wildest regions yet left in Western Pennsylvania. Until recently, perhaps even yet, bear were plentiful and deer occasionally found in this valley. The Kinzua viaduct



GREAT KINZUA VIADUCT, 300 FEET HIGH, TO BE TAKEN DOWN.

has been a point of excursion and an object of curiosity for sight seers ever since it was built. Gen. Grant was taken there on one occasion.

GREAT COKE AND COAL YEAR.

Tremendous Output of Both Expected in Western Pennsylvania in 1903.
This year will witness the greatest era in the coke and coal regions of Western Pennsylvania in its history. In the Connellsville coke region more new ovens will be built than in any previous year, and the coke production will be increased fully 20 per cent. There are now projected and in the course of erection more than 2,000 new ovens, which will be put in operation by the middle of the coming summer, which will run the total of the coke region up to 21,000 ovens. At the beginning of the present year there were in operation in the region 18,000 ovens. During the past twelve months the price of coke has nearly doubled, and the demand to-day greatly exceeds the production. At the present price, \$3, the business is most profitable. Two years ago coke was selling for \$1 a ton. The production of the coke region for 1897 was 8,500,000 tons, while during the year 1898 9,525,000 tons was shipped from the Connellsville region. The 1897 product was valued at \$14,000,000, while that of last year represented a value of \$20,500,000. The enlarged capacity will increase the product for 1900 to about 13,000,000 tons, with a value of nearly \$30,000,000. Just now there is a famine in coke. The famine is not acute because coke can be had for immediate delivery, but only in small quantities. Coke makers are just now getting \$3 a ton for furnace coke and \$3.25 for foundry coke. Pennsylvania's coke is now bringing \$5.50 at Cincinnati and \$5.50 at St. Louis. All kinds of coal have greatly advanced in price, and to-day there is not an idle mine in all Western Pennsylvania. In many cases the price of the miners has been advanced greatly. The coal famine has induced many large Pittsburg consumers to buy up coal lands, and many new mines will be opened soon. A large syndicate, formed of Pittsburg consumers, has obtained control of more than 1,000,000 acres of rich coal lands around the city, and will operate mines to supply their manufacturing plants.

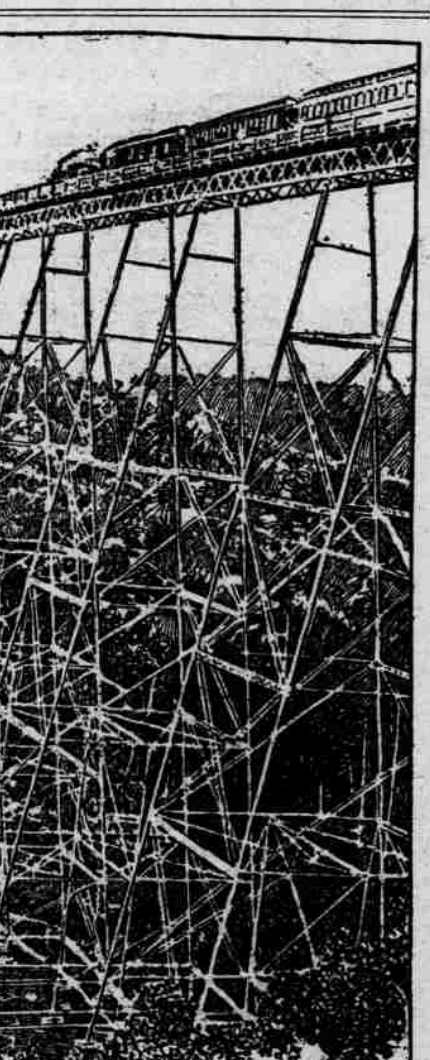
MYSTERY OF THE MAINSPRING.

Some Breakages Not Yet Understood Despite Much Investigation.
Despite the investigations regarding the structure of mainsprings and the efforts to improve them; despite the experiments and theorizing on the subject, some of the causes of the breaking of mainsprings remain an unsolved mystery. Many, indeed, are the known causes responsible for breaking, such as faulty construction or tempering, careless handling, leading to the formation of rust and poor fitting, but after all these which are recognized and have been eliminated there still remains the fact well known to watchmakers that the best springs will, in spite of the most careful handling and proper adjustment, unexpectedly break, sometimes in a number of places. It will thus happen that of two springs made at the same time by the same process, of the same material, tempered in the same way and handled with the same care, one may last for years, while the other may break after two weeks' use, or even while being placed in the barrel.

mainspings to repair after a warm, humid day than at any other time. Others believe the breaking to be due to electric disturbances, stating that after an electrical storm they find that many of their customers bring their watches to them for repair. The sudden cooling and consequent contraction of the tightly wound mainspring, caused by the removal of the watch from the body on a cool night following a warm day, is believed by some to account, in a measure, for the accidents mentioned. So far, however, no entirely satisfactory explanation has been suggested. The only conclusion to be drawn from the acknowledged facts of the case is that it is not safe for the watchmaker to infer merely from the breaking of a mainspring that it is of an inferior grade, nor for his customer to believe the watchmaker deficient in skill because the mainspring of his timepiece has snapped shortly after being replaced.

JUST VACCINATED, THAT'S ALL.

The Pretty Young Woman Made the Passengers Angry.
There was something strikingly pictorial in the appearance of a young lady who sat in the upper left-hand corner of a Jackson avenue trolley car during one of its out-bound runs the other morning, says the New Orleans Times-Democrat. It was, no doubt, to many things—the aristocratic slenderness of her figure; to her wide,



CLINDER THOUGHT THERE MIGHT BE A CHANCE TO MAKE A LITTLE SOMETHING OUT OF THE DEAL.

dreamy eyes, the exact color of wood violets; to the great black forest of ostrich plumes that formed her hat; to the geometric curve of the towering crown of her cap; at an early date she looked as if she might have wandered out of the pages of some journal of fashion—a beautiful denizen of picture paper land, where skirts always hang in just the proper folds and trousers never hang at the knee. Everybody looked at her, the men admiringly and the women coldly, as they always do when another woman is better dressed, and she withstood the scrutiny with regal composure. She did not seem aware that anybody else was present. At last the car neared her corner, and when she had pressed the button and the wheels were almost at a standstill she arose calmly and glided down the aisle. She was at the door when the car came to a full stop, and seeing her stagger slightly from the shock, the conductor instinctively laid his hand upon her arm.

It was a courteous and respectful act and one that might have saved her from a fall, but the instant his fingers touched her sleeve the haughty beauty leaped backward as if she had seen an apparition. Her delicate face went white and her dreamy eyes blazed. "Don't touch me, sir!" she exclaimed, with a harshness that shocked and astonished every hearer. The conductor was a plain, kindly man, and, flushing with mortification and chagrin, he turned back to his platform, while the young woman gathered her skirts and passed swiftly through the door. "Well, that was a queer one," commented a bystander who had taken in the episode over the top of his newspaper, "that was about the most painful exhibition of superciliousness I ever witnessed in my life. 'Fah!' No wonder the poor 'Nabobs' are getting a growl of approval and the conductor thrust a smiling face through the doorway. 'Don't blame de young lady, gents,' he said, cheerily. 'She explained it all when she was gettin' off. She didn't mean to do nothin'. You see, she's just been vaccinated.'

WOMAN'S MOST WINEFUL AGE.

Why do women hesitate to tell their age? By common consent it is regarded as very rude and boorish to ask a woman a categorical question regarding the number of her birthdays. Yet there should be no diffidence on the point, and no reticence on the subject of age. Except for some rare cases connected with business which may find in accumulating years a handicap, a man is usually very open about his age and as ready to proclaim it as his wife and sister are to conceal theirs. Probably the feeling in the matter had its origin in the long ago when matrimony was the ordinary woman's only desirable goal, and when as she grew older her chances of finding a mate diminished perceptibly.

COULDN'T HELP IT.

An Old Yankee's Yarn of Better Days Was Pure Fiction.
An old man was sawing wood in a Maine village the other day. He had taken a job and was putting in his best ticks. A man who was going past stopped and looked over the palings of the fence. "Kind o' tough work, isn't it, uncle?" asked the passer. The old man straightened up and stroked the sweat off his forehead. "Wal, middin' 'art," said he. "Sort o' takes hold o' my lumbergo once in a while. I don't suppose I should mind it so much if it hadn't been for the fact that I had money once and didn't have to do such things as this."

FILIPINOS' QUAIN, ANCIENT AND HOME-MADE CANNON.



SOME curious old cannon have been captured in the Philippines. Some of the arsenals taken have been found to be veritable museums of ancient ordnance. The relics of bygone warfare were left behind by the Spaniards when they evacuated the place for many and many a year. They are valuable not only as curiosities, but also as a record of the progress of the art of war. At first the rebels were without field artillery, but later they smuggled in a small supply of modern field pieces, which, however, they never succeeded in using effectively.

GUESS ON 1900 VOTE.

FORECAST OF NEXT NOVEMBER'S ELECTION FIGURES.

New York Sun Figures Out that About Fifteen Million Votes Will Be Cast—Factors that Are Expected to Affect the Number.

In the election of 1892, the first following the last federal census, the total vote on Presidential electors was 12,150,275. In the election preceding, in 1888, the last before the census, the total vote on Presidential electors was 11,382,424. Between 1888 and 1892, however, Idaho, casting 10,000 votes; Montana, casting 44,000; North Dakota, casting 36,000; South Dakota, casting 70,000; Washington, casting 87,000; and Wyoming, casting 16,000, were admitted into the Union, and these cast collectively 272,000 votes. The net gain, therefore, during the intervening four years was 485,000, or about 4 per cent.

At the same rate of increase the total vote at the Presidential election, in 1896, should have been about 12,640,000. Instead of this, it was more than 14,000,000, a total vote without precedent in the United States, or, in fact, in any country in which universal suffrage exists. So large an increase in the number of voters in four years following a period of financial depression, has been ascribed generally to the interest enlisted in the McKinley-Bryan contest preceding and to these cast special reasons contributed to the large total of four years ago. As a matter of fact, such causes did contribute materially and perceptibly, and a statement of the reasons preceding and these cast special reasons contributed to the large total of four years ago. As a matter of fact, such causes did contribute materially and perceptibly, and a statement of the reasons preceding and these cast special reasons contributed to the large total of four years ago.

It was a courteous and respectful act and one that might have saved her from a fall, but the instant his fingers touched her sleeve the haughty beauty leaped backward as if she had seen an apparition. Her delicate face went white and her dreamy eyes blazed. "Don't touch me, sir!" she exclaimed, with a harshness that shocked and astonished every hearer. The conductor was a plain, kindly man, and, flushing with mortification and chagrin, he turned back to his platform, while the young woman gathered her skirts and passed swiftly through the door. "Well, that was a queer one," commented a bystander who had taken in the episode over the top of his newspaper, "that was about the most painful exhibition of superciliousness I ever witnessed in my life. 'Fah!' No wonder the poor 'Nabobs' are getting a growl of approval and the conductor thrust a smiling face through the doorway. 'Don't blame de young lady, gents,' he said, cheerily. 'She explained it all when she was gettin' off. She didn't mean to do nothin'. You see, she's just been vaccinated.'

CAMEO CARVING.

A Description of the Tools and the Method Employed.
All the tools used by the cameo carver would make but a handful, says the New York Evening Post. The worker sits before a wheel turned by a pedal, tools occupy a small corner of the table, the surface on which the worker's hands rest while he holds the shaped stone or shell beneath the needle-like drill. The little pointed instruments which are used to drill resemble those employed by a dentist, and, indeed, it was from the cameo carver's kit that the dentist got many of his ideas when the tools now in use by them came to be manufactured, thirty years ago. The drills vary in thickness according to the portion of the figure of design to be executed. Some are as fine as the point of a cambric needle. A small china receptacle also stands near, filled with oil and diamond dust and into this the workman frequently dips his tool during the progress of his work.

POPE LEO'S GRACEFUL ACT.

Pope Leo was able to show deference to an older man than himself at the celebration of his coronation. Cardinal Martel, who is 92 years of age, and the senior Cardinal in length of service, having been Cardinal deacon to the Vatican, was unable, after the Pope's address, to join in the delectable past the throne. The Pope, noticing this, stepped down from his throne and walking to Cardinal Martel wished him many more years of life.

TEASEMENT DWELLERS IN BOSTON.

More than 500,000 tenement dwellers are in Brooklyn, according to official figures just issued. The number of tenement houses is 31,837.

IN THE DINING CAR.

"Is that all?" "You eat and belch adds all the evening." "How silly!" "Oh, I don't know. You have to be in a hurry."—Philadelphia Bulletin.

Every woman likes to talk of the "eray monotonous" of her life.

FLIGHT EXTRAORDINARY.

Pesant Woman Shot from a Mountain Taintop to the Valley.
Teresa Falciola, an Italian peasant woman, met recently with an extraordinary adventure. Near her home, in the village of Quarra, which nestles in a spacious valley, is a high and wooded mountain, and there it has been her custom, as is general there, to go two or three times a week for the purpose of collecting firewood. To bring this wood from the precipitous mountain was quite an arduous task. Therefore it was sent down by means of a strong metal wire, stretched from the valley up to the mountain top.



TERESA'S WILD FLUNG.

A few weeks ago she and her two little daughters ascended the mountain after gathering three good bundles of wood prepared to send them down. Just, however, as the mother had fastened the first bundle to the wire and had launched it on its downward course the wedding ring became caught in the rope with which the bundle was tied, and in a flash she was carried off her feet and swept downward into the valley. Half paralyzed with fear, her little daughters watched her as she sped from their sight with amazing swiftness, and then they ran down the mountain, fully expecting to find her lying dead at the end of the wire.

And their fear was quite natural, since the mountain top from which their mother had fallen is 800 yards above the valley. Fortunately, they found their mother entirely uninjured. Yet, wonderful indeed was it that her life was not crushed out of her at the end of her perilous descent. It would have been if her fall had not been broken as she was reaching the earth by some friendly branches. The bundle of wood, too, was in some measure a bulwark against the rock.

LAW AS INTERPRETED.

An agreement by a member of a building and loan association to insure his life and permit the policy to be used as collateral security for a loan to the association is held, in Tate vs. Commercial Building Association (Va.), 45 L. R. A. 243, to be void as against public policy.

That a corporation organized to furnish railroad terminal facilities has authority to maintain a hotel, restaurant and news stand at a passenger station is held, in Ryan vs. Louisville & Nashville Terminal Company (Tenn.), 45 L. R. A. 303, insufficient to preclude the corporation from exercising the right of eminent domain on the ground that it would be taking property for private uses.

A man who has a cold, on account of which he is in bed, is held, in Barnes vs. Fidelity Mutual Life Association (Pa.), 45 L. R. A. 204, to be, nevertheless, "in good health," within the meaning of a clause in a life insurance policy which requires the premium to be paid while he is in good health, although pneumonia sets in, in a day or two after the premium is paid, and proves fatal.

Giving the exclusive right to stand back on an area owned by a railroad company adjacent to a passenger station for the purpose of soliciting business is held, in Indianapolis Union Railroad Company vs. Dohn (Ind.), 45 L. R. A. 427, to be in violation of the ground that the company, having acquired its grounds, whether by purchase or condemnation, through the sovereign right of eminent domain, cannot grant any special privileges and immunities that the State could not, and that such action is also against public policy as tending to restrict competition and enhance prices.

GOOD FERTILIZERS.

Some of the best farms in Pennsylvania have been brought to the highest degree of fertility by the use of clover, lime and manure. The farmers who have accomplished such results have aimed to save every pound of manure, and also to preserve it in the best manner. Lime is used extensively by those who know that lime is an essential ingredient of plants, and also because it is excellent for increasing the clover crop. Clover enriches the land by producing a supply of the ground that soil, hence lime and clover make an excellent combination.

A PRIMITIVE BAROMETER.

A curious barometer is said to be used by the remnants of the Aranzan race, which inhabit the southernmost province of Chili. It consists of the cast-off shell of a crab. The dead shell is white in fair, dry weather, but, indicating the approach of a moist atmosphere by small red spots, as the moisture of the air increases it becomes entirely red and remains so throughout the rainy season.

THE DEBATE CLOSED.

"Yes, sir!" shouted the little man with thin, straggling hair, "the constitution of the United States guarantees to every man liberty of speech, and I'd like to see any one try to deprive me of it!"

JOHN HENRY.

"John Henry," exclaimed a large woman of a decided mind, who had just entered the room, "you dry up and come home."—New York Journal.

READY TO QUIT.

First Office Boy—I call my boss Gridley. Second Office Boy—Why is that? First Office Boy—Because he may fire when he is ready.—Puck.

HOT WATER FOR HEADACHES.

Ordinary headaches almost always yield to the simultaneous application of hot water to the feet and the back of the neck.

PENILESS KLONDIKERS.

The number of peniless men in the Klondike is placed at 3,000.

We have noticed that the healthiest looking children are those whose faces are allowed occasionally to accumulate dirt and microbes.