WRINKLED BY TOIL,

Beauty Soon Fades From the Faces of the Peasant Girls of Russia.

THEY DIG IN THE FIELDS,

While a Man Watches Over Them Like the Slave Driver of Old.

NOVEL COURTSHIP AND MARRIAGE.

The Poot Test for a Bride and the Horrors

of Her Honeymoon.

NO ROOM FOR WOMEN DOCTORS THERE



Moscow, Sept. 20. HE women of Russia! How shall I describe them? They are like no other women on the face of the globe, and still among their millions they have types of almost every race of women known. In St. Petersburg you see the fair-baired, blueeved, freckle-faced maidens from Fin-

land walking the streets side by side with the red-haired girls ho have been imported thither from the Caucasus and Georgia, and here at Moscow you see the Tartars, the Cossacks and the Armenians mixed together with the other different types of the 80 provinces of this vast empire. Along the Volga vou will meet different costumes and different races of comen at every landing place, and the girls of Little Russia wear different clothes and have different manners from those of Great Russia and South Russia.

Here in Moscow there are a vast number of gipsies, and Russia has the barem of the Sohammedan, the polyandry of the Himalayas and the varied combinations of civilized love and marriage. The pure Russians look upon marriage much as we do, and of late years the relations of the sexes among the upper classes have been almost as free as they are with us. The Russian lady of to-day has her friends among the young men of her acquaintance, and though she rarely goes about without a chaperone, she crives her callers in her own home and her ideal marriage is one of love.

The Age Limits of Marriage. Of late years the laws of marriage have been radically changed, and now females are forbidden to wed save between the ages of 16 and 69. Men cannot marry until they are over 18, nor after they are 80, and divorces are less common in Russia than they are with us. The church of Russia objects to more than one marriage. It has its penances for second and third marriages, and a man who marries a fourth time is excluded from the holy comparents, and in most cases the woman is expected to bring a very respectable dot wish her. I know of an American girl who recently married a President and the woman and the finnish girls, who act as the wet recently married a President and the Finnish girls, who act as the wet recently married a President and the Finnish girls, who act as the wet recently married a President and the Finnish girls, who act as the wet recently married as President and the Finnish girls, who act as the wet recently married as President and the Finnish girls, who act as the wet recently married as President and the Finnish girls, who act as the wet recently married as President and the girls and the domen wear a very pretty embroidered come high about the neck. The nurses everywhere have been used to be a president and the domen wear a very pretty embroidered come high about the neck. The nurses everywhere have been used to be a president and the domen wear a very pretty embroidered come high about the neck. The nurses everywhere have been used to be a president and the dresses and the dresses are the president and the numion. Few marriages are made in the recently married a Russian noble. The nurses for the babies of St. Petersburg, alnoble came to America and the wedding can tell a nurse as far as you can see her. was celebrated in one of our large cities Before it took place, however, the groom called upon the bride's father and asked about the settlement. "What settlement?" said the old man, who had considerable wealth, but who had not hitherto had a describer marry a European baron

"The settlement upon my wife," was the realy. "Don't you intend to give ber something at the time she is married?" "I had not thought of it," replied the old man. "And how much do you think she ought to have

"Well," said the Russian noble with a



A St. Petersburg Belle.

hem and a haw, "it seems to me that she ought to have at least \$50,000. It would not be a bad idea of the sum was \$100,000." I don't know whether the old man objected or not, but as the story is told here he raised the \$50,000 and put the securities for it in the bank to bis daughter's order before the marriage took place.

The Borse Whip Wielded by Husbands The Russian woman now has more rights after marriage than she ever han before. Two hundred years ago she was little more than a slave and the husband's horse whip always hung over the bed of the married pair, and it was used freely. Women were then seldom seen upon the streets and Peter the Great had a way of kicking them when he met them here or in St. Petersburg and telling them that their place was home and that they ought to be in it. The wife beating of to-day is almost altogether confined the peasants, and the Counters Tolstoi told me that even the peasants were improving in the treatment of their women. The peasant women have in fact many rights of which the women of the other parts of

the world know nothing. In the communal systems by which the villages of Russia are governed the women stand on an equal footing with the men as regards the distribution of property, and they have their share of the property of the village according to their spare in the work. According to Russian law the legitimate wives and daughters of the man get only one-fourteenth of the family inhe but by the law of the peasants the right of inheritance comes from work alone, and there is no distinction between wives and concubines. The husband inherits the wife's property only when they have lived together more than ten years, and otherwise it goes back to her parents. The peasant women take part in the village assemblies and widows who are the heads of families have the right to vote. There are is made up of women, and this assembly divides the land of the village and a woman

may be Mayor of the village if she is elected | to meet a woman and he had better turn

The daughters of these merchants are often very religious and very superstitious. Their marriages are usually made by matchmakers, and the merchant is expected to give a good dowry with his daughter when abe enters matrimony. Long engagements are not common, and they seldom last more than two or three months. Among the peasants the girls usually weave and embroider their own wedding gowns, and they begin to get ready for marriage as soon as Gangs of Women in the Fields. The peasant women of Russia are all hard workers. You see them everywhere in the fields mowing and reaping, spading up the ground and raking the hay and doing, in fact, everything that man can do. They work in gauge of 20 or 30, and each gang of women is usually directed by a man, who acts as overseer and who keeps them at their work. They go into the fields almost as soon as they are old enough to walk and they work until they are gray haired. Hard labor soon takes the beauty out of them and the older women have faces like leather, full of wrinkles and furrowed with care. The younger girls are plump, bright-eyed and, in some cases, pretty. I have seen few beautiful women among them, but there are few very ugly ones. The type of the Russian peasant's face is

the most of the faces show strength of char-

seter and many of them are what you would

while working in the fields and their feet

noes as they use are made of bark, woven

into the form of slippers like basket work, and in the winter they put great heavy boots of felt upon their feet.

Even Fete-Day Dresses Are Simple.

Neither eex wears stockings, and they

wrap a cotton rag around the toot and up

the ankles to about the middle of the calf, tving it round and round with a string.

Their dresses are short, and they tuck then

A Little Russian.

ap while they are working. Even on a fete

day their dresses are not very expensive, and a costume consisting of a white chemise

same as that of generations ago. I saw in

Kazan Mohammetan women who wore sacks over their heads with the sleeves

hanging down on the shoulders and with

they could see as they went along the street,

Adorned With Real Coins.

I saw other women there whose heads and

like those of the women whom you see in the Himalaya mountains of India on the boarders of Thibet, and these Tartar women

have the same bronze faces and high cheek-bones that are found in the girls of the

Himslaya mountains. They are of Mon-golian origin and they look more like Chinese than Americans. The coins which they wear are real coins and they generally

represent the dower which the woman brings into the family when she is married.

preast plate covered with gold come and

Speaking of woman's work among the peasants, the hardest field work is done by

he women and they get lower wages than

orning to 7 or 8 o'clock in the evening

the men. Their hours are from about 4 in

and 15 cents a day is big wages. If they receive food their wages are even less than

this, and in some parts of Russia girls get 8

cents a day and board themselves. In other regions their wages rise as high as 20 cents,

and in a very lew parts of the empire they are paid even more than this. They are, as

rule, better workers than the men, and

hey do not seem to appreciate how badly

off they are. I hear them singing in the fields as I travel throughout the country, and they do not seem to think their life a hard one. They marry young and the rule here is a large lamily. Nearly every woman

you see has a baby at the breast, and Russi

has perhaps more children to the popula-

Marriages among the peasants are often

The Middle Class of the Empire.

and the women of this class are to a large

Beauties of Finland.

or the peasants. They do not do the hard work of the peasants nor have they the in-telligence of their sisters of the nobility.

The merchants of Russia form to a large ex-

wives and daughters are kept out of sight. They spend their time in dressing, smoking and esting, and their husbands when they

ally speak of them as "the children of the

Above the peasants is the merchant class,

ranged by the parents.

ion than any other country on the globe.

whose head was loaded down with them.

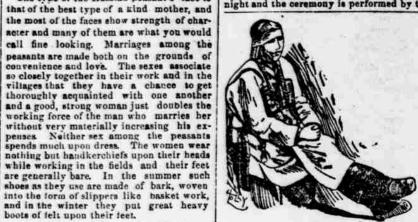
of the women of Little Russia have a similar way of ornamenting themselves, and I got a photograph of one who had a

exactly like that of the women of Korea.

and the dress of these women

broider their own wedding gowns, and they begin to get ready for marriage as soon as they are old enough to sew. Among the merchants after a girl is engaged her friends come in and help her sew upon her wedding outfit, and she has sewing circles and quilting bees in preparation for the marriage. These sewing circles are held during the afternoon, and after tea the bridegroom and a few of his bachelor friends drop in, and the girls and the future bride have a dance with them during the evening. Curlosities of the Marriage Service Russian marriages generally take place at night and the ceremony is performed by the

The daughters of these merchants are



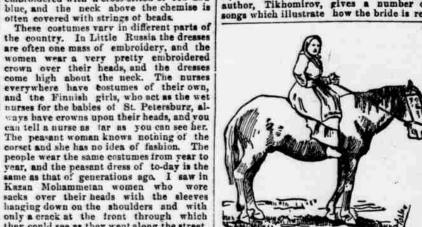
A Snap Shot Along the Voiga.

priest. The bridegroom meets the bride at the church and the pair carry lighted tapers with them to the altar. The taper that burns out first is supposed to indicate the death of its holder. After the ceremony the bridel restricted in the ceremony the bridel restricted in the ceremony the state of the ceremony the bridel restricted in the ceremony the state of the ceremony that the ceremony the ceremony that the ceremony that the ceremony the ceremony that the ceremony th death of its holder. After the ceremony the bridal party walk three times around the part of the church where the cross is, and after the benediction they kiss the holy pictures of the church and they kiss each other three times during the ceremony. When the whole service is over the bridegroom lends the bride to his house, where his peasants greet him and where they are blessed with bread and salt. There is a wedding upper after this. Every Russian man wears supper after this. Every Russian man wears boots, and it used to be the custom that the bride must pull off her husband's boots the first night of the marriage. In one of these boots before going to the wedding he usu-ally secreted a sum of gold or silver, but he did not tell his bride in which boot the did not tell his bride in which boot the money was. If she got the right boot the money belonged to her and her husband had to draw off his own boots in the future. If she got the wrong one he had the right to use her as a bootjack whenever he pleased. This, however, was a custom only of the lower classes, and it is now more honored in the breach than the observance.

in the breach than the observance.

The Russian bride, however, has her happiest time just at the marriage. The peasant's wife has, perhaps, as hard a lot as any woman in the world, and this is especially so during the first years of her married life. She is the slave of her husband, and, what is worse, she is usually the slave of her mother-in-law, and she is treated as badly as the widow is in India. as the widow is in India.

and dropping down to the knees, with an apron tied around over the bust, constitutes a woman's outfit. This chemise-like dress is fastened over the bust and under the arms, and is held by braces over the shoul-How the Bride Is Received at Home. Here, where the families of three generations often live together in a hut of one or two rooms, the young bride is not welcomed, and the young husband can do little to protect her. The oldest man of the family is boss of the household, and the Russian author, Tikhomirov, gives a number of songs which illustrate how the bride is reders. The apron is tied around the waist, as well as over the shoulders, and the skirt reaches nearly to the feet. The dress is embroidered with a cross-stitch of red and



Hose Russian Women Ride.

ceived into the family. In Little Russi Who is to bring the water? The daughter in-law. Who is to be beaten? The daughter-in Why is she beaten? Because she is the daughter-in-law.

As soon as she comes into the family, the older members make war against her. Says father-in-law:
"They have brought us a bear."

Says mother-in-law: "They have brought us an eater of men. Say the brothers-in-law:
"They bave brought us an unclean thing." Say the aunts:

"They have brought us a spinner of And so the young woman spends her honeymoon, and so she lives until she be-comes an old woman and is ready to avenge her wrongs upon her daughter-in-law of the future. Think of the troubles of woman future. Think of the troubles of woman and of the horrors of having to raise fami-lies and go through all the pains and troubles of motherhood under such circumstances. Still this is what these people do while laboring day after day in the fields; they accomplish on the poorest of food the work of able-bodied men.

Just Like Our Summer Girls. The women of the higher classes of Russia are among the best educated and most intelligent women of the world. I met a sweet little Russian on the Volga steamboat dissouri who told me she liked philosophy better than fiction and that the only novels she cared for were those she could have in her own life. She was on her way to the summer resorts in the Caucasus and she had ful time with her until I happened

the same loving and lovable ways of the summer girl of America. I had a delightmention that I was married and then she forsook me for the bachelor from America forsook me for the bachelor from America who was traveling with me. She rather thought I was going through Russia under false pretenses because I had not a plain gold ring on the wedding finger, and she said every married gentleman in Russia had to wear one. She spoke English in a sweet broken way and talked French and German fluently. Every girl, in fact, in a well-to-do family in Russia begins to prattle in foreign languages almost as soon as she cuts her first teeth. She has three or four governesses and she learns her French, German and English as a child. man and Euglish as a child.

Many of the ladies of the higher classes

here have been educated in the colleges of Europe, and, until within a few years ago, a woman could get a good college education in Russia. All of the female colleges but one, however, have been abolished, as the Government thinks they are the hotbeds of nihilism, and they were closed by the imperial order about five years ago.

The Czar Opposed to Women Doctors. In 1872 a woman's medical college was opened at St. Petersburg and it had about 400 students, and during the ten years of its existence it graduated 600 won existence it graduated 600 women doctors. It was closed, however, and though there are some women who still practice medicine in Russia, the bulk of them are permitted to do their work only as ansistants, and they are tolerated only as an experiment. When the present Car came to the throne he prohibited the practice of medicine by women, but they have been allowed to practice. to practice, though their work is in reality contrary to the law. FRANK G. CARPENTER.

the Russian churches is a woman permitted to go into the inner sauctuary, and if one is going out hunting it is considered bad luck

Firm—All siz stopped free by Dr. Kilne's Great Nerve Restorer, No six after that day's one. Mary going out hunting it is considered bad luck

Firm—All siz stopped free by Dr. Kilne's Great Nerve Restorer, No six after that day's one. Mary going out hunting it is considered bad luck

NOTES AND QUERIES.

POLICIES OF ENGLISH PARTIES.

The Accepted Story of the Origin of

the Expressive Uncle Sam.

What It Has Cost to Build the Railroads of This Country.

SOME CURIOUS BITS OF INFORMATION

In these days of patriotism and politics the true story of the origin of the name "Uncle Sam" is often asked. Dr. Brewer gives this, which is accepted by many Americans as the correct version. During the war of 1812 Elbert Anderson, of Troy, was a contractor for meat and pork for the army, and Samuel Wilson, familiarly know as "Uncle Sam," was the inspector of supplies, who passed-or did not pass, as the case might be—his goods. Anderson's barrels of beef were marked "E A.—U. S." A stranger, seeing a young fellow lettering the barrels, asked him what the letters meant; for the initials "U. 8." were still unfamiliar as standing for United States "Sam" Wilson was standing by, and the Yankee, pointing toward him, said that they meant "Elbert Anderson-Uncle Sam," Many of Anderson's workmen entered the army, carrying their Jokes with them; and so the story that "U. 8." meant "Uncle Sam" was spread abroad; and as the American nation needed something to typify it—just as England is typified by John Bull, France by Johnny Crapand, John Bull, France by Johnny Crapand, Germany by Hans, Russia by a bear— "Uncle Sam" was accepted as filling a "long felt want."

First—Who was the strange and unknown man who was walking the streets of London during the dreadful plague some centuries back and crying out, "O, the great and dreadful Godi" Second—Are any of Napoleon Bonaparte's marshals living; if so how many? Third—Is there apiece of garment anywhere in the world that was worn by our Savior; is there any one of the nails or piece of the cross in existence that is known positively to be part of that connected with the scenes of the crucifiction?

H. S.

First-He is still unknown. He may have been a fanatio, or more probably, if he really was any one, he was a Londoner made insane by the terrible experiences of the time. Solomon Eagle, according to De Foe, went around making similar remarks; perhaps he was the strange and unknown

man.
Second—No; the last of Napoleon's marshals to die was Jean Toussaiut Arrighi de Canovas, Duke of Padua, who died March 21, 1853. Marmont and Soult were his

Third—At Triers (or Treves), in Germany, is an ancient garment said to have belonged to Jesus Chri-t. Whether or not it really belonged to Him, it is very ancient, perhaps the most ancient complete garment now existing. Unbelievers have said that the train existing. that there is enough "true wood of the holy cross" in existence to make a large forest. Certainly the relies of the Lord, exhibited or owned in Europe, are worthy of reverence, even if one does not admit that the chain of evidence connecting them with Christ is absolutely flawless.

What is the difference between these par-ties in British politics: Liberals, Tories, Whigs, Nationalists, Conservatives, Parnell-ites, Anti-Parnellites, Unionists?

The names Tory and Whig are no longer applied to the political parties in Great Britain; the Tories now generally call them-selves Conservatives, while the Whig party 60 years ago began to call itself the Liberal party. The Liberals incline toward new things, the Conservatives hold back. The Liberal-Unionists, or simply Unionists, are Liberals who left the party in 1886, be-cause they feared that Mr. Gladstone's home rule plan, if carried out, would break maintaining the union. The Nationalists are the Irish Home Rulers; the Parnellites are the Nationalists who believe in Parnell. the anti-Parnellites, or McCarthyites, are those who prefer to swear by Justin Mc-Carthy. The distinction between the Mc-Carthyites and the Parnellites is very small; but for that reason it will doubtless exist for a long time.

Can you tell me where I can get a divining or mineral rod that will locate gold and sil-ver! J. J. W.

You can get a balancing compass from any dealer in scientific goods; when placed horizontally it acts as a compass, but when held vertically the needle will dip toward metallic deposits. But it will not indicate gold or silver. For those metals, according to a very old superstition, you must have a witch hazel tork, which you must get secretly; cut it with a single blow of a new knite at midnight; and don't forget that in cutting it you must be fasting, and must not use the name of the Deity in any shape. use the name of the Deity in any shape.

The belief in the divining rod dates back for centuries; Scott tells of a master of the divining rod describing Dousterswivel in "The Antiquary."

John was Ernest's father; John's last wife was Ernest's first wife's sister; John's second wife had a daughter when she married him; Ernest married John's stepdaughter. Now, the question is, what kin or relation John's last children were to Ernest's last children?

LOOKINSIDE.

This looks very difficult of solution, but it isn't really. The seeming complication comes because of the unnecessary detail about Ernest's first wife having been an elder sister of John's second wife; throw that out, and the proposition remains-John married the mother, his son married the daughter; what relation were their chil-dren? John's children were half brothers and sisters to both Earnest and his wife, and couldn't be anything else. Their tather was Earnest's father, their mother was Earnest's wife's mother; that's all there

Can you give me the title of one or more books upon economic questions in Great Brital, France and Germany—especially those bearing on their tariff laws, international trade, and wages?

O. W. F. Of English books may be mentioned: Cobden's "Political Writings," Bastable's "Theory of International Trade." and Thorold Rogers' "Six Centuries of Work and Wages;" most of the British political economists are free traders. Among French writings are: Cournot's "Principes de la theorie des Richesses," Gide's "Principes d' Economie Politique," Chevalier's "Les Salaires au Dix-neuvieme Siecle," and of German works these are readable: Gustav Cohn's "System der National Oekon-omie," Roessler's "Zur Kritik der Lehre vom Arbeits-lohn." You can get these vom Arbeits-lohn." You can get these from or through any dealer in reference books; the prices vary occasionally. The list is by no means exhaustive.

What is meant by "Home Rule for Ire-land?" Absolute independence of the British Government? D. H. W. Self-government:

Self-government. At present the Irish are governed by what used to be called in this country "carpet-baggers"—outsiders, that is. Mr. Gladstone's idea seems to be to give Ireland local self-government, using the word "local" broadly, to refer to the whole of the Emerald Isle; while it will have no power, distinct from that of other parts of the United Kingdom, to act in foreign or "imperial" matters. That is—though the English are not yet willing to admit it—it will become much like one of our States, with similar powers and limitations. It is not intended to separate the country entirely from Great Britain.

tations. It is not intended to separate the country entirely from Great Britain.

Why is the Northern boundary of Delaware an arc of a circle?

The Duke of York, after the English conquered the New Netherlands, became as

least nominal ruler of all that the Dutch had held, that is, both sides of the Delaware river. Lord Baltimore, however, claimed to own the west bank; and William Penn, after he had obtained his charter, claimed likewise to own it as well as the Eastern side. Finally, in 1682, Penn offered to give up his claim to Delaware if he could get the west bank of the river, and ceded to Delaware the country 12 miles around New Castle. This accounts for the sami-circular Northern boundary of Dela-

What has been the average cost per mile of railroads in this country? D. G. L. According to Poor's "Manual of Rail roads" in New England the average liabilities of companies per mile are \$57,632; in the Middle States, \$120,792; in the Central Northern States, \$53,267; in the South At-lantic States, \$40,808; in the Gulf and Mislantic States, \$40,808; in the Gulf and Mississippi Valley States, \$51,201; in the Southwestern States, \$52,620; in the Northwestern States, \$48,143; and in the Pacific States, \$59,033. These figures are not those of the cost of building, but are those of the sums per mile on which the roads are paying dividends. It has been calculated that the notual cost is very much within these figures. figures.

semi-circular Northern boundary of Dela

By what tribunal was Mrs. Surratt tried and convicted, and who composed it? SUBSCRIBER.

Mrs. Surrett and the other accused perons were tried by a military commission which sat in Washington in May and June, 1865. It was composed of General David Hunter, President; General Lew Wallace, General August V. Kautz, General A. P. Howe, General R. S. Foster, General James Ekin, General L. M. Harris, Colonel C. H. Tompkins and Colonel D. R. Clendenin, Joseph Holt, Postmaster-General under Buchanan, was Judge-Advocate, assisted by John A. Bingham and Colonel H. L. Bur-

Which has the higher building, Chicago or New York? Chicago, we think. Three of its buildings have 16 stories above ground. Then the Masonic Temple in Chicago is to be 20 stories in height, while there are three more 16-story buildings going up there and only one 14-story building going up in New

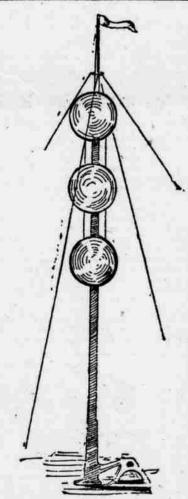
What is the declaration of the National Democratic platform as to Russian He-brews? Section 11 of the platform adopted at

Chicago reads: This country has always been the refuge of the oppressed from every land-exiles for conscience's sake-and in the spirit of the founders of our Government we condemi founders of our Government we condemn
the oppression practiced by the Russian
Government upon its Lutheran and Jewish
subjects, and we call upon our National
Government, in the interests of justice and
humanity, by all just and proper means to
use its prompt and best efforts to bring
about a cessation of these cruel persecutions in the dominions of the Czar, and to
secure to the oppressed equal rights. We
tender our profound and earnest sympathy
to those lovers of freedom who are struggling for home rule and the great cause of
local self-government in Ireland.

SIGNALING THE WEATHER,

The Ball System Proposed for the Benefit of Forming Communities.

The system for signaling the weather illustrated herewith was devised by Mr. W. B. Kendali at Bowdoinham, Me., which has many things in its favor. The cut explains it very well. Simply a pole about 80 feet in height placed on a high hill, and then large wire balls hauled up on the pole. One ball



rain or snow, and three bails, general rains. No provision has been made for indicating the temperature, because the farmers do not consider that important, unless a frost is expected. In that case a penuant could be displayed from the topmast. With these balls from 8 to 12 feet in diameter, they can be seen outlined against the sky for six to eight miles, and even farther by the aid of a glass. The system is not in use yet, but should be thoroughly tested, says the Bos-A working model was put on exhibition

at the fair grounds in Maine.

SHIPS BUILT OF ALUMINUM. By the Use of That Metal the Weight Can

Be Reduced One-Half.

Leed's Mercury.] Fifty years ago the introduction of iron as a building material created a revolution in the science and art of shipbuilding. It is now certain that in the very near future an even more important revolution will be created by the introduction of aluminum. At present there are in existence but five small craft constructed of this metal. Three are petroleum yachts, which were built this year at Zurich. One is a Swedish lifeboat. The fifth is a vacht which is now complet-Until two or three years ago the high price of aluminum entirely barred the way to its general usefulness, but the metal has

tween this city and East Liberty 125 of these signals-incoming and outgong. The since become much cheaper, and to the ship-puller it offers so many striking advanelectric light system extends to Thirty-third street, and it is the intention to project it tages that, even at the comparatively high price which is still charged for it, it is sure to East Liberty when the company's plant now in process of construction, is complete which will be about September 15. A Complicated and Extensive Plant. On the Pittsburg division, extending to Altoons, there are now 400 levers and 275 signals, not including the block towers. There are 200 switches and 175 locks, with a total of 600 functions, or complete movements. Between Pittsburg and East Liberry there are 125 signal blades. Some of these operate numbers synchron-

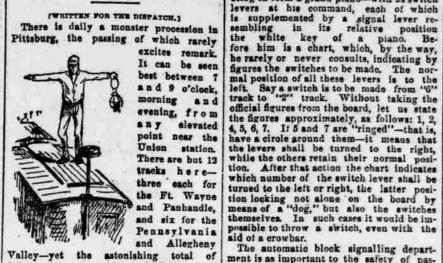
300 TRAINS IN A DAY.

How the Great Wheeled Procession at Union Depot Is Handled.

NEARLY 100,000 LIVES AT STAKE.

The Wonderful Pystem of Switching and Signalling Now in Use.

PART COMPRESSED AIR PLAYS IN IT



Valley—yet the astonishing total of ment is as important to the safety of passoo trains per day, arriving and engers and employes as any other feature.

departing is promptly and safely handled.

Considering the facilities, this is the world's

The schedules give no approximate idea

of the number of trains. Thus the Pennsyl-

vania's schedule enumerates 9 through

trains east-bound daily and 11 west-bound.

or arriving. The official figures for July

show that there were 23 through trains on

this line each way daily. These figures are

nade possible by the ease with which "sec-

tions, ad libitum, can be tacked on to regu-

lar schedules, thanks to the unerring block

The Enermous Sabarban Traffic.

In some degree the same variation oc-

curs in local or suburban schedules.

Union station every 24 hours. The Allegheny Valley has 39 and the Pittsburg, Virginia and Charleston 23 trains daily.

Virginia and Charleston 22 trains daily. The Fort Wayne numbers but 20, its outlet

and receptacle for suburban traffic being the Federal street station in Allegheny.

Counting an average of seven cars to each train, this procession exceeds 25 miles in length every day. Considering that these figures refer only to passenger traffic, the sate and prompt transmission to their destinations of so many thousands (approximating 100,000 daily) of precious human lives to the care of the greatest of modern achieves.

is one of the greatest of modern achieve-

The number of men and the amount of

machinery required to handle these 300 trains daily is amazing. It should be borne in mind, too, that the motive mechanism is complicated and costly, so far as the establishment of the original plant is concerned.

All of the figures herewith given apply only to passenger trains. The Fort Wayne

only to passenger trains. The Fort wayne freights go by way of the West Penn to Bolivar Junction and the Panhandle freights over the Pittsburg, Virginia and Charleston via Port Perry and Brinton

The details of the handling of this wast passenger traffic afford a fascinating sub-ject for study. The arrival or departure of

a train implies from two to five manipula-

tions and they are as perfectly synchronous

and barmonious as though they were auto-

Unfolding of the Panorama.

To comprehend this complex system of

noving trains, it is necessary for the obser-

ver to station himself on Liberty street, or to obtain a perch on the hill near the High

School building. Here the whole panorama unfolds itself. The movement of trains is

between this city and Stewart station, 17 miles distant. The government of these trains is confided to officials who are known

by the titles of Train Directors. There are

three of these men in each of the towers who work eight hours each, and scarcely

any strain can be put on a man greater that they are at times obliged to endure.

Take, for instance, the Fourteenth street station. No less than 1,630 distinct move-

ments have here been made in one day of 24

movements made in one hour. This means

the making of a complete route and the locking of it with the customary signal. At

the Seventeenth street tower a maximum of 1,400 movements has been reached in one

day, the highest number of movements made in any one hour being 75.

In the Fourteenth street tower are 20 switch levers, 22 signal levers and 6 spare

levers. There are 33 home signals and 4 pot drilling signals, also, 25 switches and 25 locks. The total number of functions is 87. A "function" is a route complete—

signals set and route locked. There are b

matic.

ecord breaker.

signal system.

THE INTERLOCKING APPARATUS FOR OPERATING SWITCHES AND SIGNALS.

Counting an average of seven cars to each train, this procession exceeds 25 miles in the model and pride of the pneumatic interfigures refer only to passenger traffic, the

ture of a relay.

tion, except the Western connections of the Pennsylvania Railroad. He has as aids telephone, telegraph, schedule and word of mouth. The telephone extends from the Station Master's office to the Fourteenth and Seventeenth street towers, and thence

to the Seventeenth street Passenger Yard-master's office.

The remarkable feature of the passage of these trains is this: But two trains at one time can pass the Fourteenth street towerone in each direction, or both in the same
direction. At the Seventeenth street tower
seven trains, mingled as to direction, can
pass simultar cously.

The leverman stands at a board-resem

mal position of all these levers is to the left. Say a switch is to be made from "6" track to "2" track. Without taking the official figures from the board, let us state the figures approximately, as follows: 1, 2, 4, 5, 6, 7. It 5 and 7 are "ringed"—that is, have a girele around them.

have a circle around them—it means that the levers shall be turned to the right,

while the others retain their normal posi-tion. After that action the chart indicates

It is so arranged that when connection is

made between any two companion rails by means of car wheels and axles an electrical

The Principle of the Air Brake.

onnection is formed which closes the arms

This electrical energy forces compressed

air into a tube and against an armature at-tached to a pin-valve. The reverse action releases this confined air, which seeks the

easiest outlet, which is into another ramifi-

the automatic blocks between Fourteenth street and East Liberty. At the East Lib-

erty and Walls shops are other pumping

reserve for emergencies are pumping stations at Twenty-eighth street and Wilkinsburg.

motive power for a dynamo, by means of which a storage battery is charged.

The Switching and Signailing Corps,

Robert Pitcairn is the father of this switch-

ing and signalling corps and is proud of the

pody of expert and accurate young men

which he has gathered around him. He has

entrusted the supervision of the signalling

system to Mr. A. M. Keppel, Jr., who was formerly Assistant Division Operator for

A CORKSCREW RAILBOAD.

Acute and Chronic Malaria Cured. Playing the Rullroad Plano.

A series of investigations has been car-ried on during the past few week at the Surgical Hotel, Columbus, O., under the direction of Dr. S. B. Hartman, which has furnished some very interesting results not commonly known to the public. For the benefit of the non-professional

MALARIA PARASITES

What Recent Investigations Reveal.

Science Triumphs Over Poisons of

Bog and Pool.

The leverman stands at a board—resembling in form a grand piano—with 24 switch levers at his command, each of which is supplemented by a signal lever resembling in its relative position the white key of a piano. Before him is a chart, which, by the way, he rarely or never consults, indicating by figures the switches to be made. The normal position of all these levers is to the reader we stop to explain that malaria (commonly called chills and fever, fever and ague) is caused by a minute organism which germinates in stagmant water. These organisms live in the water and can do no harm until the water dries up, leaving the organism to perish, when its spores or eggs, with which its body is filled, are carried into the air by the wind or washed into wells or streams by showers. These minute spores find their way into the system through the air we breathe, the water we drink or the food we are the find or the food we are the food we have the food w drink or the food we eat, and their presence in the blood sets up the disease known as malaria. The organism which causes malaria and its spores are so very small that they can only be seen by the aid of the very best microscope in the hands of an experienced microscopist. To become familiar with the appearance and habits of the malaria organism requires long and careful or the malaria organism careful organism careful or the malaria organism careful organism careful organism careful or the malaria organism careful organism care the malaria organism requires long and care-ful study on the part of the microscopist. The most important fact revealed by the late investigations at the Surgical Hotel is that there are two distinct malaria parasites— one capable of producing acute malaria, distinct chills and fever; the other producing chronic malaria, in which there is no distinct or regular occurrence of chills and fever. The organism which produces acute malaria is distinguished from the organism which produces chronic malaria by its form and movements.

The parasite of acute malaria is known to the microscopist as cytomoeba, and is capa-ble of amoeboid movements, its form being roundish. This parasite is well shown by the following cut from a pencil drawing made at the Surgical Hotel by their microscopist, as seen through a powerful microscope. The cut represents the organisms magnified many thousand times:



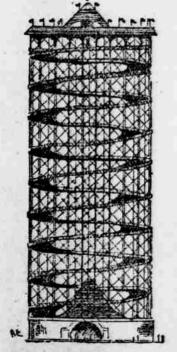
Fig. 1 in the above cut shows the organism with its body full of exceedingly minute granules, which will soon develop into spores. Fig. 2 in the cut shows the same organism with the spores fully developed. oped, ready to be thrown off. Fig. 3, in the same cut, after they have been thrown off by the parasite, which spores will rapid-ly grow to the size of the parent organism. All this can occur under favorable circumstances in a few hours, so that they multiply with incredible rapidity.

easiest outlet, which is into another ramifi-cation of pipes. The last-named operation, or the escape of the air mechanically, re-leases the counterweight of the signal to its "danger" position. The normal position of the automatic blade is "safety." Only after the passage of a train will it show a "danger" or "block" signal. The entire system is based on air compression, to de-scribe which would be but a duplicate description of the essential principle of the Westraghouse airbrake system. As before stated, it is this kind of malarial parasite which causes acute malaria or fever and ague. It is well known that qui-Thus the scheduled trains between Braddock and Walls and Pittsburg number 35 in each direction, whereas the daily average is 40. The suburban traffect of the Panhandle has grown so rapidly that it will surprise even regular patrons of the road to learn that 64 through and local Panhandle trains arrive at and depart from the content of the road to learn that 64 through and local Panhandle trains arrive at and depart from the content of the road to learn that 64 through and local Panhandle trains arrive at and depart from the content of the schedule but a duplicate description of the essential principle of the which would be but a duplicate description of the essential principle of the will generally cure such cases. It is well known that quinne will genera is the one generally used. Whenever Peru-na is taken for acute malaria-that is, to break the chills and fever—it should be taken as follows: During the intermission stations which are constantly in use. In taken as follows: During the intermission a wineglassful of Pe-ru-na every two hours (children in proportion) should be taken until four doses are taken, after which a tablespoonful every hour during the remainder of the intermission until the time for the next chill has passed. And when the chills are stopped a tablespoonful every two hours during the day should be taken for ten or 15 days, or until the cure is permanent.

The parasite which causes chronic malaria s quite different from the above parasite in its appearance as well as its effect upon the human body. The following cut shows them in the three stages of their growth This organism is known in technical lan-guage as polimitus, or the parasite of La-



Fair Will Get a Bird's-Eye View. In Midway plaisance, just outside the exposition grounds, the World's Fair Tower Company will erect an odd and striking structure. The tower will not be remarkable for its height, for it is to be only 560 feet tall, but for the peculiar method of getting to the top of it. This tower is something in the form of a corkscrew, surrounded by uprights of steel. It consists directed mainly from the Fourteenth street tower, which is only one of several towers between this city and Stewart station, 17 is not intended to use elevators in making electricity will take the passengers up. Near 'he top is a landing place in the form of a floor that extends entirely across the



Some of these operate numbers synchronously so as to cover any one of two or three
switches which may be thrown. There are
between Pittsburg and Stewart, distant 17
miles, 325 signals of all kinds, including
interlocking and automatic blocks. Of
these there are 200 automatic signals separated by distances averaging from one-half
to three-quarters of a mile.

The Train Director in the Fourteenth
street tower controls absolutely every train
entering or departing from the Union sta-

the Western Division.
It is a safe challenge to issue to say that for promptness, safety and speed, obstacles being equal, the efficiency of this system mannot be paralleled in the world. Tower by Which Visitors to the World's THE PARASITE OF CHRONIC MALABIA

In Fig. 1 of the cut the body of the para-

site is filled with undeveloped spores. Fig. 2 shows them in a higher state of development. Fig. 3 shows the same spores ready to begin work for themselves. The symptoms set up by these organisms in the human system are so entirely different from soute malaria that they need description here. They will often pester a person for months without making him sick abed, but making him genuinely miserable—creeping rigors, coated tongue, appetite changeable, cold, sweaty hands and many indescribable sensations of genuinely disagreeable kinds, melancholy feelings, a discouraged, listless state of mind, tired-out feelings and bilious-

It is a fact well known to the medical profession that quinine will not oure this form of malaria. It has been demonstrated over and over again at the Surgical Hotel that, while quinine will generally destroy the parasite of acute malaria, it will have little or no effect on the parasite of chronic malaria. It is just here that Pe-ru-na as a malaria cure shows its great superiority over quinine. Both the parasites of chronic and acute malaria are destroyed by Pe-

It will cleanse the system of every partiele of malarial poison. It restores the ap-petite, clears the befogged senses, and brings back a hopeful state of mind, which malaria is sure to destroy. In these cases two tablespoonfuls of Pe-ru-na should be taken before each meal. This dose should be gradually increased to three tablespoonfuls at each dose if the symptoms do not improve soon. Man-alin should be taken according to the directions on the bottle if seconding to the directions on the bottle if he bowels are constipated. Further particulars can be obtained by sending to the Pe-ru-na Drug Manufactur-

ing Company, Columbus, Ohio, for their free book on malarial diseases.

including the most select styles from the leading houses in Paris and New York, as well as the production of my own French designs. Mourning millinery a specialty.

MILLE E. DREYER.

644 Penn avenue, Pittsburg, Pa.