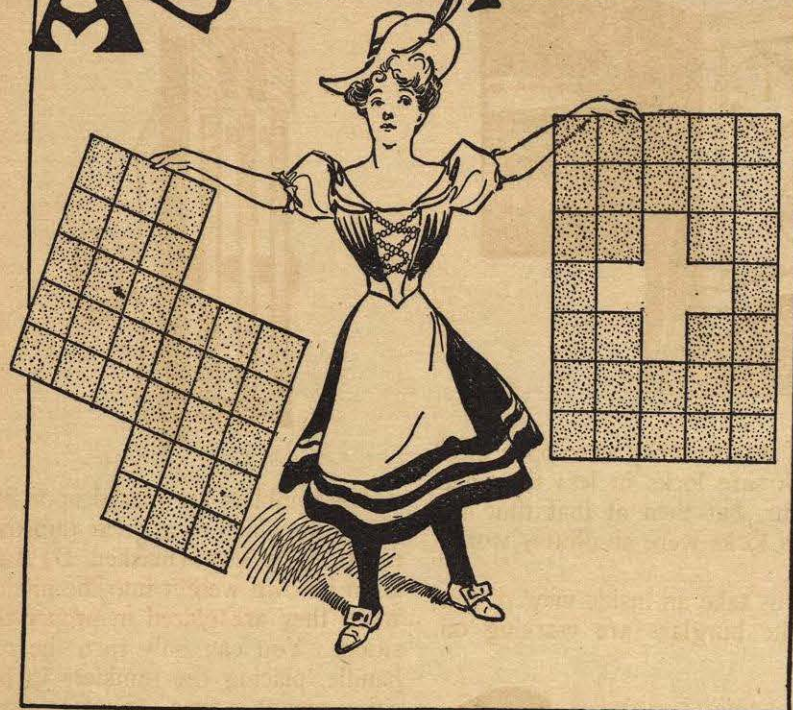# A SWISS PUZZLE

HERE is a very pretty trick performed by Miss Carrè Schwitzer, which rivals Betsy Ross' feat of producing a five pointed star with one clip of the scissors. When Admiral Schwitzer asked his daughter to suggest an ensign for the Swiss navy, Carrè seized an odd shaped remnant of red wall paper and skillfully divided it in two pieces which would fit together so as to form the Swiss flag with the white cross, as shown in her left hand.

When she was told of Betsy Ross' feat she said she could go her one better. She took a Swiss flag, as here shown, and cut it in two pieces which would fit together and form a perfect square.

Of course if you can make a Swiss flag from a square, it is just as easy to reverse the operation—cut a square in two pieces which will form the flag.

Carrè performed other feats with the Swiss flag which we will take occasion to mention. When she had charge of the signal station on Mt. Pilatus and wished to signal the fleet that a storm was rolling down the mountain, she took a square piece of bunting and cut it into two pieces which would fit together and form the following flag.

In the Swiss language this tells of an approaching storm. Literally translated it says: "There will be a hot time in the old town to-night." Just to see how clever Miss Schwitzer was, try to cut the signal flag in two pieces which will form a perfect square.

Miss Schwitzer always acted on the square and was much respected on that account. She taught her Sunday School class how to cut three little squares into the fewest possible number of pieces so as to form one big square, and also the way to cut the three squares so as to form a Swiss cross, more recently known as the Greek cross. Try both of these puzzles.

William Tell asked her how to make a Maltese cross and she re-plied "pull its tail." She founded the order of the red cross.

There are two very beautiful puzzles connected with this cross, which are worth knowing: Cut the cross in two pieces which will form a rectangle, or cut it in three pieces which will make a perfect square.

We shall take early occasion to mention some of the marvelous feats performed by Carrè Schwitzer in cutting Swiss cheeses, and in juggling with pans of milk at her Swiss milk factory, near the chalk hills of Luzerne.

A Charade

If you a journey ever take,
No mattter when or where,
My first would surely have to pay
Before you can get there.
My second you would scarcely see
If London through you go;
But still 'tis what I hope you are:
Few better things I know.
I say my whole with secret pain,
Though hoping soon to meet again
Cipher Answer.—6, 1, 18, 5, 23, 5, 12, 12.

A Rebus

To warn you of danger before you we stand,
Which we're sanctioned to do by the heads of the land.
Our counsel unasked we most gladly impart,
Some virtuous impression to make on your heart.
But if you trespass, as you surely will find,
A punishment justly for sinner's designed.
Cipher Answer.—16, 18, 9, 5, 19, 20; 19, 20, 18, 9, 16, 5, 11.

A Riddle.

A hundred and fifty, when joined to a tree,
Makes a fine garment that warms you and me.
Cipher Answer.—3, 12, 15, 1, 11.

THE LITERARY BURGLARS
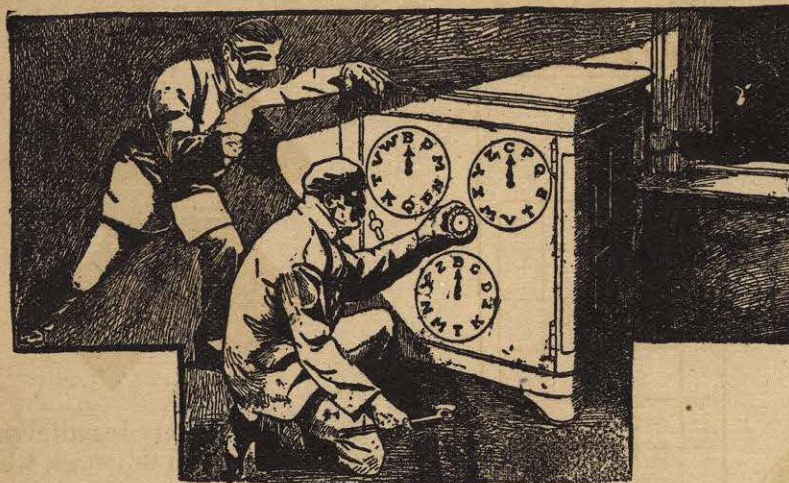
THE principle of a safe lock, of the kind most generally known as a combination lock, pertains to the nature of a puzzle pure and simple, and, indeed, such locks are referred to by the oldest writers on the subject as puzzle-locks. A combination lock is nothing but a puzzle, and its safety depends entirely upon the difficulty, or rather the improbability of a person guessing the right combination.

Here are two literary burglars bent on opening a safe by guessing the three letter word which serves as the key. You can see that there are but ten letters on each dial, so you can open the safe by finding a three-letter dictionary word, one letter of which is shown on each dial.

As comparatively few persons understand anything about the principle of a safe lock, it will be of general interest to give a simple explanation of the inside workings:

Look at the construction of the first combination lock ever made; and despite of the thousands of patents and great improvements made of late years, the principle is always the same. I have taken out numerous patents on improvements to make them safer, but bankers and others who have large sums of money locked up in their safes would feel more apprehension if they understood the real nature of a combination lock. It might baffle a burglar for a month, but is just as likely to be opened in from one to twenty minutes. On several occasions when I was called in to open a safe lock the trick did not require fifteen minutes.

During the Paris Exhibition of 1867 I was so lucky as to open three French safe locks in less than half an hour, but then at that time the French locks were absolutely worthless.

Let us take an inside view of that lock the burglars are working on.

Each outside dial connects with a round disk or tumbler with a slot which must be placed in position to receive that crooked hook which we call the dog. You cannot turn the middle handle which draws the bolt until all three of the disks are in their proper position at the same time, and you can only tell when they are in their correct position by knowing the proper letters to which the lock is set. If there are only ten letters on each dial and there are but three tumblers, the burglar will probably open the safe in fifteen minutes, for 10 x 10 x 10 gives but 1,000 possible changes, so the chances are he will hit it in 500 trials.

I give this primitive illustration of a three tumbler lock, because it is the same that A. C. Hobbs, the famous American expert, brought to me somewhere about 1851, when he picked the great Brahmah lock in London and won two hundred guineas.
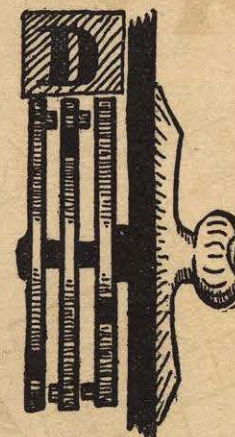
The tumblers are placed upon one pin now, which is a great improvement. The dog (marked D) falls from its own weight into the nitches when they are placed in proper position. You can only turn the one handle, placing the tumblers in position one at a time. Turning three times forward, twice backwards and then one forward again.

The tumblers of the ordinary key locks are guarded much in the same way:
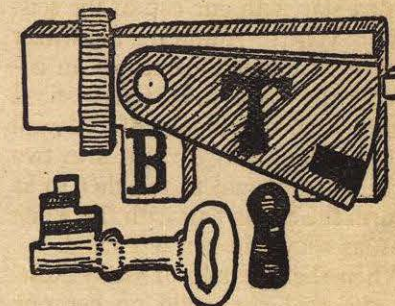
In the above illustration the bolt is kept from being drawn back to the right by the tumblers marked T. They turn on the round pin and press against that little square dog. The key therefor at the same time that it pushes the bolt back must have stop or wards which will raise the tumblers exactly to the correct height to receive that square pin in the slots.

A Riddle

I with a pen my first display;
My next increases day by day.
My whole is fraught with anxious fears
For those who'd hope for many years.
Cipher Answer.—4, 15, 20, 1, 7, 5.

GRANDFATHER'S PROBLEM
— BY —
SAM LOYD.
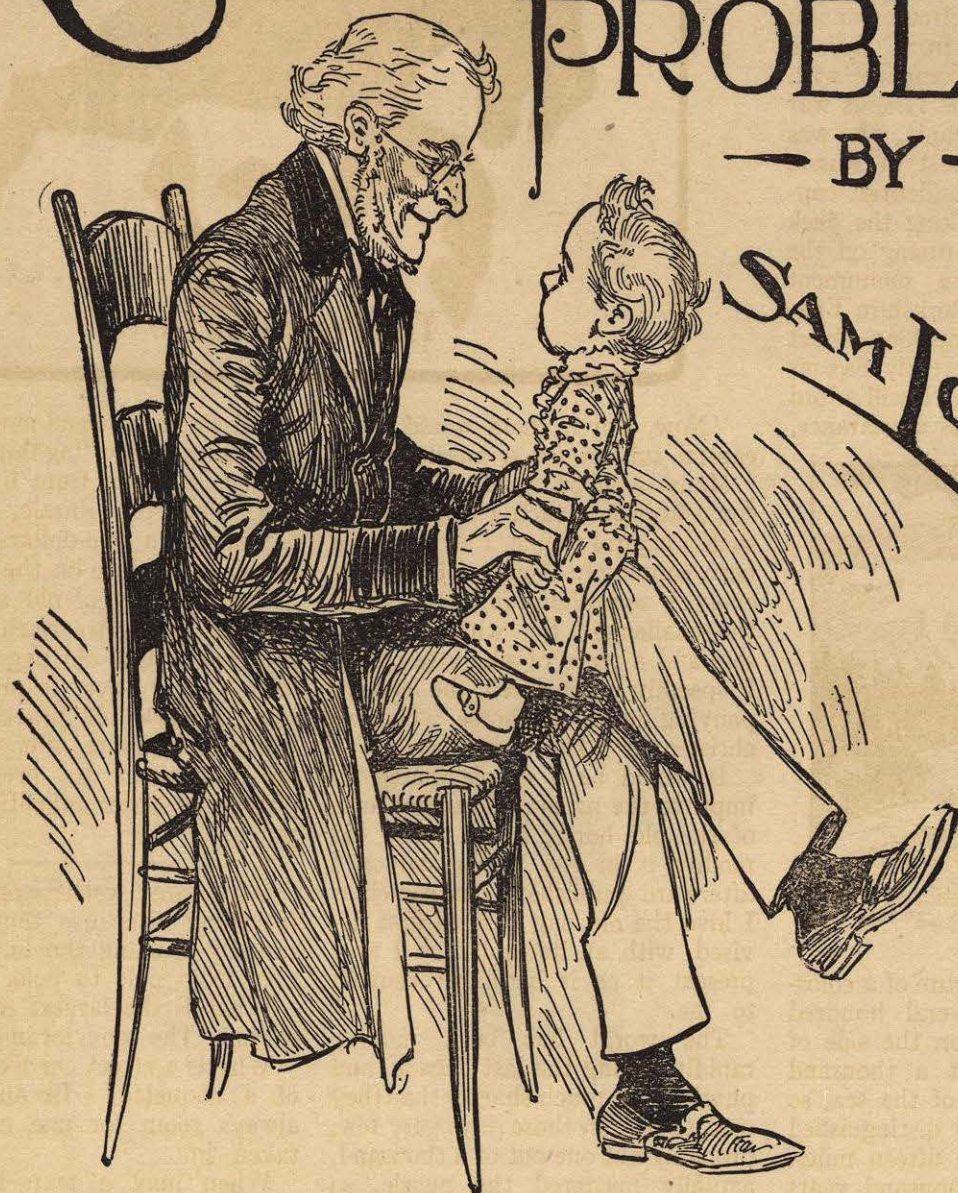
PROPOSITION—What is the difference in weight of six dozen dozen pounds of feathers and half a dozen dozen pounds of gold?

ERE IS ONE OF THE old-time problems of our great - grand - daddies which has been passed down through successive generations without any one's having the temerity to question the correctness of the accepted answer which is that "a pound is a pound the world over." It recently so happened, however, that a little boy from Boston, who was a juvenile puzzlist, had the antique gem sprung upon him and gave an answer which took the wind out of the sails of his doting old grandfather.

Of course, you have asked and been asked so often regarding the difference between six doz. pounds of feathers and half a dozen pounds of gold, that the answer comes spontaneously without a moment's hesitation, and yet, if the question is asked with all seriousness, with prizes for the best explanations just to encourage correct work, it is safe to say that it will be discovered that no one has really attempted to prove the old problem since its first appearance in 1614.

Now what is the difference in weight between six dozen dozen pounds of feathers and half a dozen dozen pounds of gold?

Now, in this particular case, I searched through the musty corners of my brain to select a few antique illustrations, with a rich chestnutty flavor, to revive, or rather arouse that interest which one of those good old familiar puzzles never fails to elicit and which are often associated with pleasant memories of the long ago. My object, however, was also to show that by giving a new set of teeth to some of these old saws, to prove that their sharpness has been overlooked by many of our puzzlists, in this as well as in other instances which will be mentioned.

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PEAKING ABOUT MY my first, and as a matter of fact most successful puzzle, I wish to say that it was originated nearly half a century ago under the following circumstances:

I was returning from Europe many years ago in company with Andrew G. Curtin, the famous war Governor of Pennsylvania, who was returning from his post in Russia as a prospective Presidential canidate. We were walking the deck of the steamer, discoursing on the curious White Horse monument on Uppington Hill Berkshire England If you know nothing about that weird relic of the early Saxons the accompanying sketch will afford an excellent idea of its appearance.
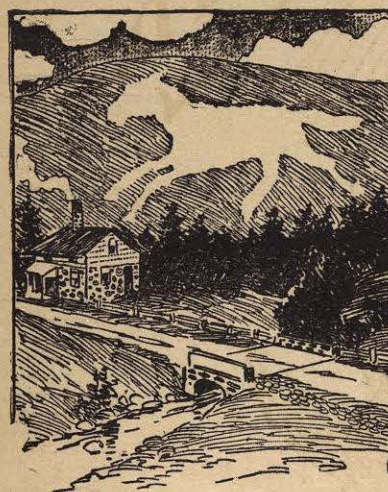

It represents the figure of a colossal white horse, several hundred feet long, engraved on the side of the mountain, about a thousand feet above the level of the sea, so that it can be clearly distinguished at a disance of some fifteen miles. It is more than a thousand years old, and is supposed to have been carved there by the soldiers of Ethelred and Alfred after their victory over the Danes, as a white horse was the emblem of the Saxons.

It looks like a patch of snow on the side of the mountain, but it is in reality produced by the green turf being removed so as to show the white chalk beneath in the form of a horse.

I am thus prolix in the description of this piece of ancient history, because it is but fair that Ethelred and Alfred should receive their share of the anathemas generally hurled at the inventor of the Pony Puzzle by those who see the answer.

After the white horse had been thoroughly discussed, the governor banteringly exclaimed:
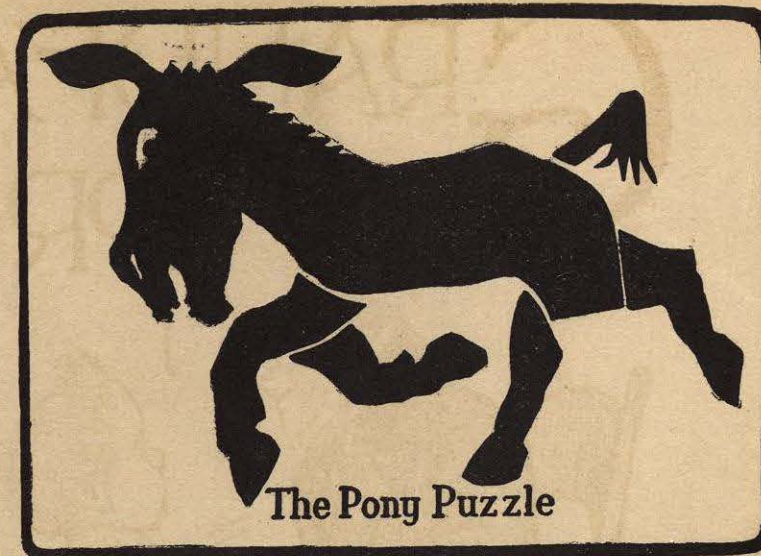
The Pony Puzzle

"Now, Loyd, there would be a capital subject for a puzzle."

Many a good puzzle idea has come from just such a tip; so, with such a capital theme, I should have been supremely stupid if I had not evolved something in response to the challenge. So, with my scissors and a piece of silhoutte paper, I speedily improvised the accompanying figure of a horse, which we christened "The Pony Puzzle."

It would be a simple matter to improve the parts and general form of the old horse, and I realy did modify it in the version which I afterward published, but somehow I love the old nag best as first devised, with all its faults, so I now present it as it actually occurred to me.

The world has been moving rapidly during the last decade, and puzzlers are much sharper than they used to be. In those days very few, probably not one out of a thousand, actually mastered the puzzle, so it will be a capital test of the acumen of the past compared with that of the present generation, to see how many of our clever wits of to-day can solve it.

Trace an exact copy of the figure, as shown, and cut out the six pieces very carefully, and then try to arrange them together so as to make the best possible figure of a horse. That is all there is to it, but the entire world laughed for a year over the many grotesque representations of a horse which can be made with those six pieces.

I sold over one thousand millions of "The Pony Puzzle," which reminds me to say that, whereas I have brought out many puzzles, and patented numerous inventions of more or less importance, and de-

voted much time and money, to my sorrow, upon the "big things." More money is uade from little things like "The Pony Puzzle," which do not require a five-dollar bill to promote and to place on the market.

The garrulity of old age has led me into saying so much about the pedigree of this old nag that I will have to carry over to another time some remarks of practical utility which I desire to offer to such as are ambitious to present their puzzles or other inventions to the public.

Why are washerwomen great travelers? Because they are continually crossing the line and running from pole to pole.

What is the largest room in the world? The room for improvement.

Why is a street car like the heart of a coquette? Because there is always room for one more to be taken in.

When may a man be said to breakfast before he gets up? When he takes a roll in bed.

Why are teeth like verbs? Because they are regular, irregular, and defective.

What is it that a gentleman has not, never can have, and yet can give to a lady? A husband.

Why is a man just imprisoned like a boat full of water? Because he requires bailing out.

When does a ship tell a falsehood? When she lies at the wharf.

What is the difference between a mother and a barber? The latter has razors to shave and the former has shavers to raise.

Why are fowls the most economical things a farmer can keep? Because for every grain they give a peck.

17

THE MYSTERY OF THE BOARDING HOUSE PIE
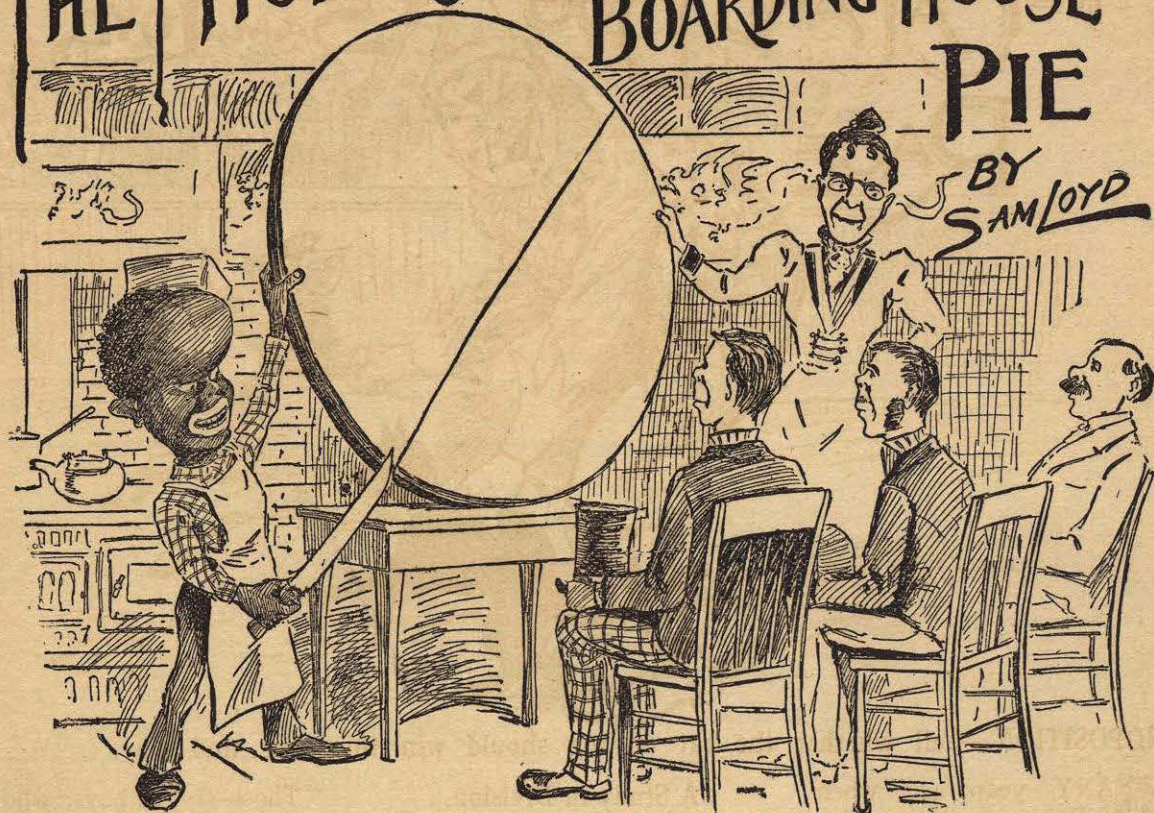
BY SAM LOYD

PROPOSITION—Into how many pieces, of various sizes, is it possible to divide a pie with six straight cuts of a knife?

AS SHOWING HOW mathematics may be discussed in a digestible form, let us look into the following unique problem, which comes in with the new regime introduced by the recently formed Pie Trust:

It having come to the knowledge of the Boarders' Protective Union that the chef of Madame O'Flaharity's Pension Francais was cutting too many pieces out of one pie, which conflicts with Article V. of the by-laws, which says: "A union pie must be divided with six straight cuts of a knife," the walking delegates of the association ordered a strike among the boarders until the grievance was corrected.

The sketch shows the madame explaining the limit of possibilities in dividing a No. 6 union pie, which problem will appeal directly to the hearts of the American pie-loving people irrespective of the beauty and importance of the proposition from a mathematical standpoint.

Madame O'Flaharity is discoursing upon the advantages of extending the greatest possible latitude to the practical application of the six-straight-cut-rule which affords an opportunity of varying the size and number of pieces according to circumstances. As a matter of fact, the opportunity for dispensing pieces of pie of variable size is generally utilized to advantage by clever landladies who have mastered the problem. The star boarders, and such as pay their bills promptly, get the big pieces with plenty of nice crust, while such as are badly in arrears get frozen out, so far as pie is concerned. And what a volume of sentiment and appreciation can be expressed by the large thick piece which the hostess serves to the young doctor who is supposed to be attentive to her daughter Mary Jane!

But we are not dealing with the sentiment and morals to be found between the crusts of a boarding house pie, we are giving a kindergarten illustration of Euclid's rule, which says in mathematical lingo: "Every line must intersect every other line, but no two intersections must coincide," which to the young folks not up in mathematical lore may be interpreted as meaning that "the old folks must be helped first and the children should not ask for second pieces."

Royal Road.

The following free translation of a German poem, which appeared during the last century in a Heidelberg college p aper, shows the high estimation placed upon the study of puzzles in that eminent seat of learning:

Children must be busy,
　Always something learning;
Toys and playthings for their secrets,
　Inside-outward turning.

While the top is spinning
　The scholars wonder all,
How it stands erect unaided,
　Why it does not fall.

While the top is humming,
　Still the wonder grows,
By what art the little spinner
　Whistles as it goes.

Children learn while playing;
　Joining sport with learning;
Pastimes, often more than lessons,
　Into knowledge turning.

Puzzles, tricks and riddles,
　Make the children clever,
Leading by the Royal road, where
　Study is a pleasure.

THE CAT AND DOG RACE

BY SAM LOYD

PROPOSITION---Tell whether the cat or dog should win this race, and why.

MANY years ago, when Barnum's Circus was of a truth "the greatest show on earth," the famous showman got me to prepare for him a series of prize puzzles for advertising pruposes, which became widely known as the Questions of the Sphynx, on account of the large prizes offered to any one who could master them.

Barnum was particularly pleased with the problem of the cat and dog race, and published it far and wide that on a certain first day of April he would give the answer and award the prizes, or, as he aptly put it, "let the cat out of the bag, for the benefit of those most concerned."

The wording of the puzzle was as follows:

"A trained cat and dog run a race, 100 feet straightaway and return. The dog leaps three feet at each bound and the cat but two, but then she makes three leaps to his two. Now, under those circumstances, what are the probabilities or possibilities in favor of the one that gets back first?

It looks childlike and bland, as Bret Harte would say, but the fact of the answer to be made public on the first of April, and the sly reference to "letting the cat out of the bag," was enough to intimate to the public that the great showman had some funny answer up his sleeve. Can you solve the puzze?

A Study in Division.

Here is a cute little arithmetical study, told in the style of Mother Goose, which shows how in the days of auld lang syne the pedagogues were wont to punish the dunces in true Mikado fashion 'by meking the punishment fit the crime."

The sketch shows three little dunces who failed ignominiously to do that simple sum in division on the blackboard, so, as the story says:

"Those stupid boys, who were so dumb,
They could not do a simple sum,
Were marked with numbers three, one, six,
And told those numbers they could mix,
And find by many changes tried
A sum which seven would divide!
You will say the answer is so plain
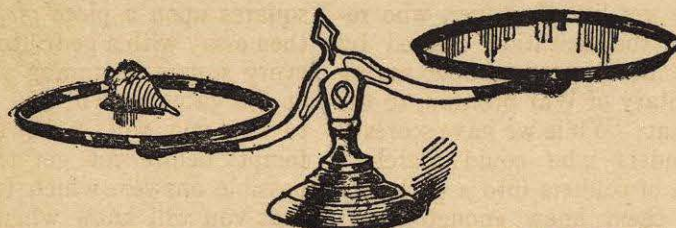That all who fail, dunce caps should gain!"
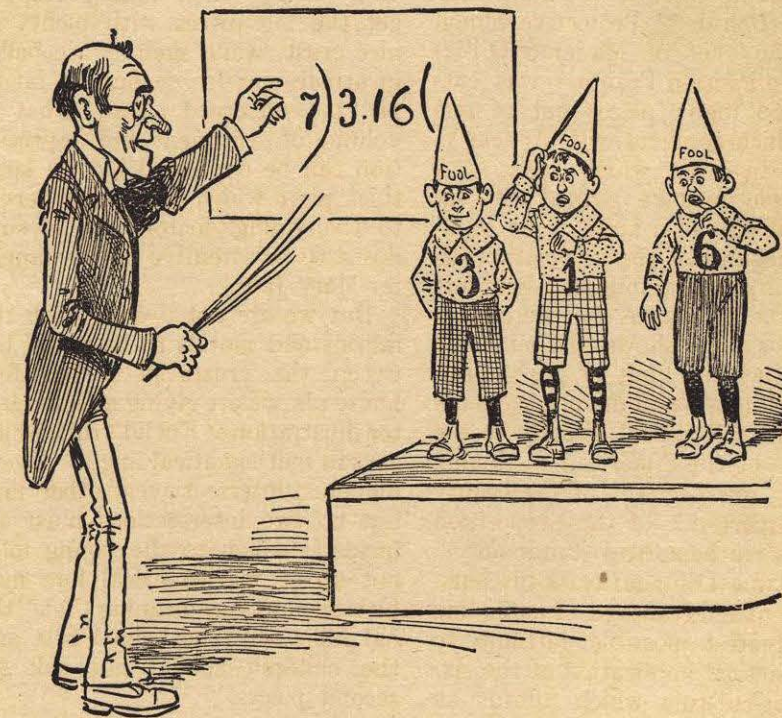
SAM LOYDS PUZZLING SCALES
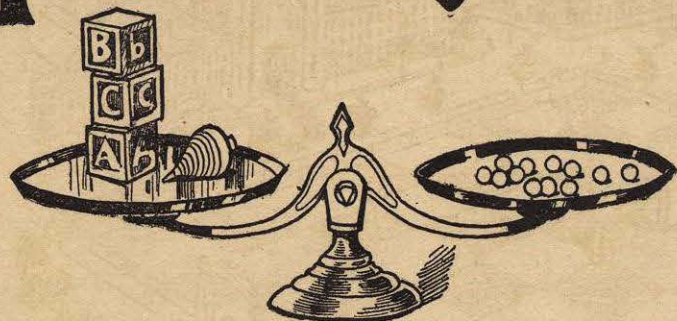
SINCE THE SCALES NOW BALANCE

AND BALANCE WHEN ARRANGED THIS WAY

THEN HOW MANY MARBLES WILL IT REQUIRE TO BALANCE WITH THAT TOP?

Elementary Lessons in Algebra.

To some people the idea of adding a b c to x y z, or multiplying letters together, seems the height of absurdity, and they fail to grasp the simplicity of algebra.

In the above puzzle we find a capital illustration of the principle of substitution and the adding of like quantities to both sides of an equation without affecting the equilibrium, so to speak, and an explanation of the reason for so doing to obtain other values. It shows the truth of the algebra axiom that "things which are equal to the same things are equal to each other."

In the first instance we see that a top and three cubes weigh equal to twelve marbles. In the second equation a top alone equals a cube and

eight marbles. Now let us add three cubes to each side of the second scales, and as the addition of equal quantities to both sides of an equation does not change their relative values, we have the same equilibrium. By the addition of three cubes to the second pair of scales we have produced the identical values as shown by the first scales. In the first case a top and three cubes=twelve marbles; in the second illustration we have proved that a top and three cubes=four cubes and eight marbles; therefore if four cubes and eight marbles weigh the same as twelve marbles, four cubes =four marbles, so a marble weighs just as much as a cube. It proves therefore that one cube and eight marbles, or nine marbles weighs equal to the top!

A Rebus

The Catholic Church my first maintains;
My next consists of poles and chains.
Distinctive whole—may'st thou ne'er brand
With foul disgrace our native land.
Cipher Answer.—13, 1, 19, 19, 1, 3, 18, 5.

A Rebus

Add two-thirds of an inn to a couple of asses,
You'll then see a brute that all other surpasses.
Cipher Answer.—1, 19, 19, 1, 19, 19, 9, 14.

A Rebus

My first denotes a company, of any art or trade,
My second is a holy maid, whose vows to God are made;
My third, though hollow in the head, can make a wondrous sound,
My whole creates a cheerful laugh when mirth and wit go round.
Cipher Answer.—3, 15, 14, 21, 14, 4, 18, 21, 13.
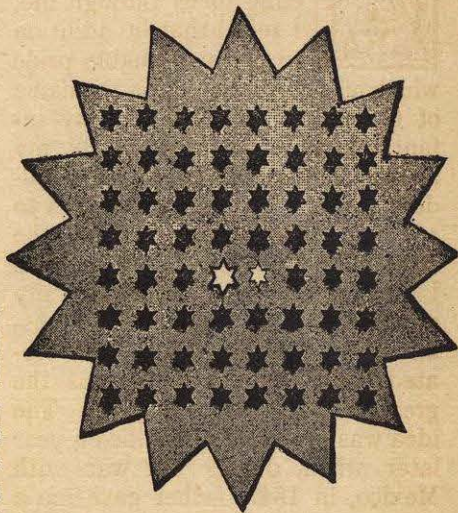
Here is an astronomical puzzle which is supposed to show the erratic path of the comet Heclai. Commencing with the small white star, show the shortest possible course through the exact center of all of the black stars so as to mark them all off and end with the big star.

In how few moves, in straight lines, could the comet Heclai destroy the entire constellation of sixty-two stars, beginning from and ending with the white stars?

MILITARY TACTICS BY SAM LOYD
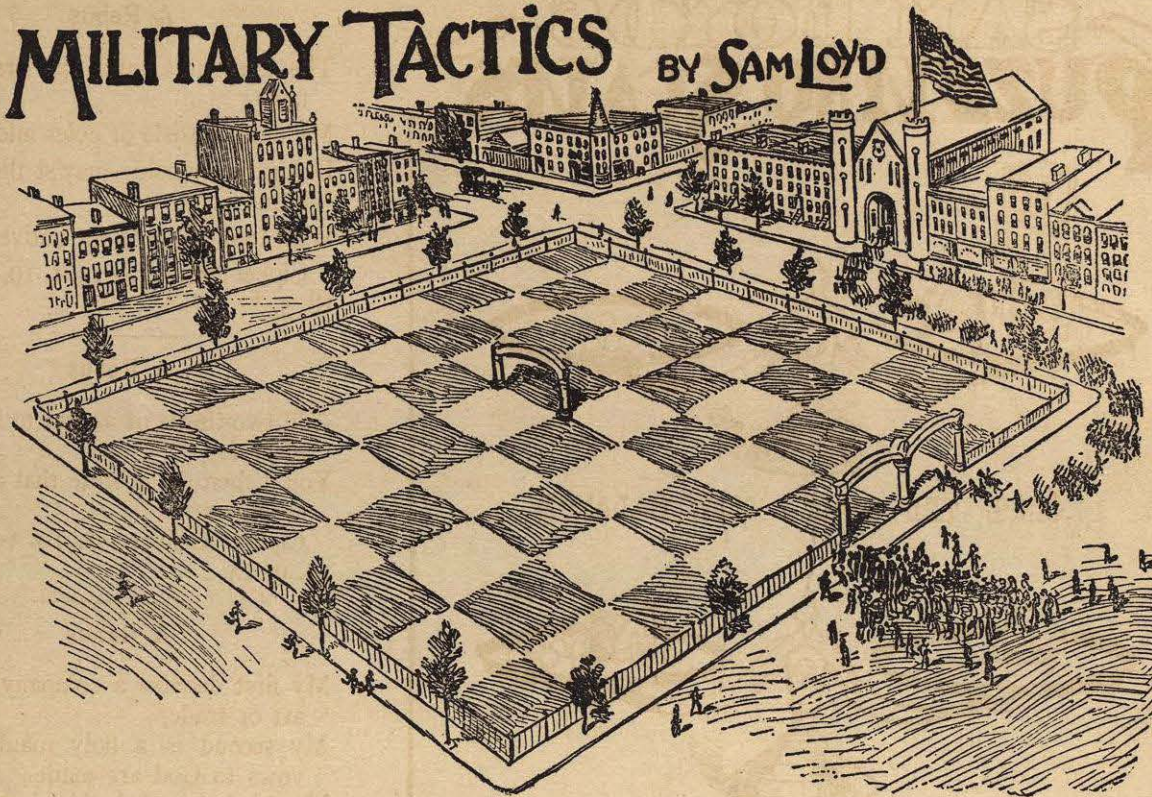
PROPOSITION—Show how a military division could enter at gate No. 1, march across all of the sixty-four squares and leave by the other gate, after passing under the triumphal arch.

AS SHOWING HOW our earliest impressions cling to us through life, I recall that in addition to the pardonable pride which all Americans felt n the name of General Winfield Scott, my infantile imagination was fired by my father's holding me up on his shoulders during a military procession to see the hero who whipped the British at Chippewa and Lundy's Lane. I do not think that my mind has ever been entirely disabused of the impression then created, that General Scott was the greatest man that ever lived. The idea was probably intensified a year later when, during our war with Mexico, in 1847, father gave me a dog, and, as a matter of course, no boy ever forgets his first dog. It was given to me on the day of the battle of Monterey, and was appropriately christened "Monterey Scott."

When the Civil War came on in 1861, I, in common with others, predicted that General Scott would quell the war in short order. But our hero, who was born in 1788, was too old and infirm to stand the brunt of active service, and was compelled to transfer the leadership to McClellan.

Many yet live, however, who remember the sensation created by General Scott's remarkable saying to Secretary of War Stanton, to the effect that; "While we have scores of commanders who could march a division of soldiers into a park, not one of them knew enough about military tactics to get them out again!"

The remark was accepted as a scathing criticism of what were termed our holiday parade soldiers.

I knew the veteran hero as a skillful chess player, and now recall the fact of building a curious chess puzzle, which I intended to present to him, if occasion occurred, to illustrate the military tactics of a division of soldiers passing through a public park.

It does not require a knowledge of the game, as it is a puzzle, pure and simple; but to facilitate explanation, I have taken the liberty of marking the park off into squares, which resemble a checker board. The problem, however, is quite pretty: Show how a military division should enter at gate No. 1, march through all of the squares under the triumphal arch, and out through gate No. 2, making the fewest possible number of turns.

Mark an 8 x 8 diagram of 64

squares upon a piece of paper and then essay with a pencil to pass over every square beginning and ending at the gates shown, and it is safe to say you will make several attempts before you get the shortest possible answer, which is so pretty that you will know when you have guessed it.

As a further elucidation of this same scheme which is suggestive of many other equally good ideas, let us look at the following puzzle which we will term "The Wanderings of Paddy's Pig." You see the garden gate was left open so that his pig-ship entered and rooted up sixty-four squares and escaped by the same gate, after making what might be called 21 right-angled moves, without crossing that black bar.

I am sure that the trick can be done in less than twenty-one moves and it is given as a puzzle for you to find out the fewest possible number of turns that the pig had to make to get all of the "murphies."