**Proposition:** Divide the Greek Cross into three pieces which will fit together and form a rectangular oblong.

To illustrate the principle of working a puzzle backward, according to the axiom that a good rule should work both ways, we introduce a seasonable problem wherein the object is to discover how to divide a cross into three pieces which can be fitted together so as to form a rectangle which is twice as long as it is wide. This, of course, is merely reversing the proposition of converting a rectangle or square into the form of a Greek cross, but, in that it presents the angles which must be fitted together, is not so difficult as the other proposition.

The Swastica Sign
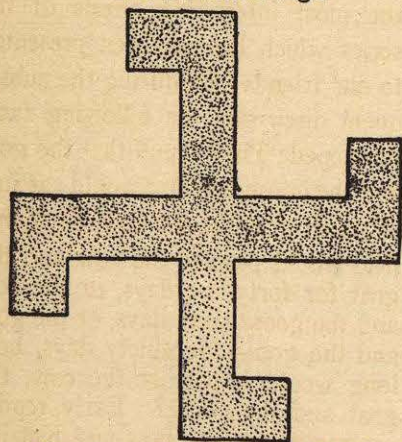

Cut into five pieces which will form a square.

Here we have the ancient Swastica symbol, which, as set forth by Prof. Wilson of the Smithsonian Institute of Washington, in a great work with some five hundred illustrations from the Aztec mounds of Mexico, the pyramids of Egypt, the ruins of Troy and of Chinese and Indian lore, was one of the oldest signs of the human race to be traced through prehistoric ages.

It is the sign of "luck to you," after the manner of the modern horseshoe, and is found on ancient temples, ruins and monuments in a way that leaves no room for doubt as to its correct interpretation, although the same can be traced for three thousand years as the Hammer of Thor, known in Masonry as the Master's mallet, emblematical of power and decision. Again we find it described in musty old manuscripts as the fylfot, or four-footed, where it is shown as four legs branching out from the center. It is only a variation of the Monad sign, and in this form is known in China as "wan," meaning "many long years to you." Prof. Max Muller says the sign is found in ancient ruins and in excavations in every part of the globe, and must have been universally recognized. Is it a mere coincidence,

or is it the discovery of a mystic secret, that we find when we take the emblem of the square and mark the sign of the Swastica in the center, that the four parts will form a perfect Greek cross, and if we mark it with the double Swastica, which was another ancient symbol, the four quarters will form two crosses! Theologians might involve a startling interpretation from these mysterious transpositions.

"I say, Alice, I just thought of an original conundrum," said Charley, who thought he was getting on to a solid footing with Miss Lofty.

"Why is the moon like a suit of clothes?"

"Mr. Lightop," replied the offended maiden, "I presume you claim that there is a man in both, but opinions might differ on that subject." And Charley felt the sand slipping away from under his feet

The bold rider refused all assistance
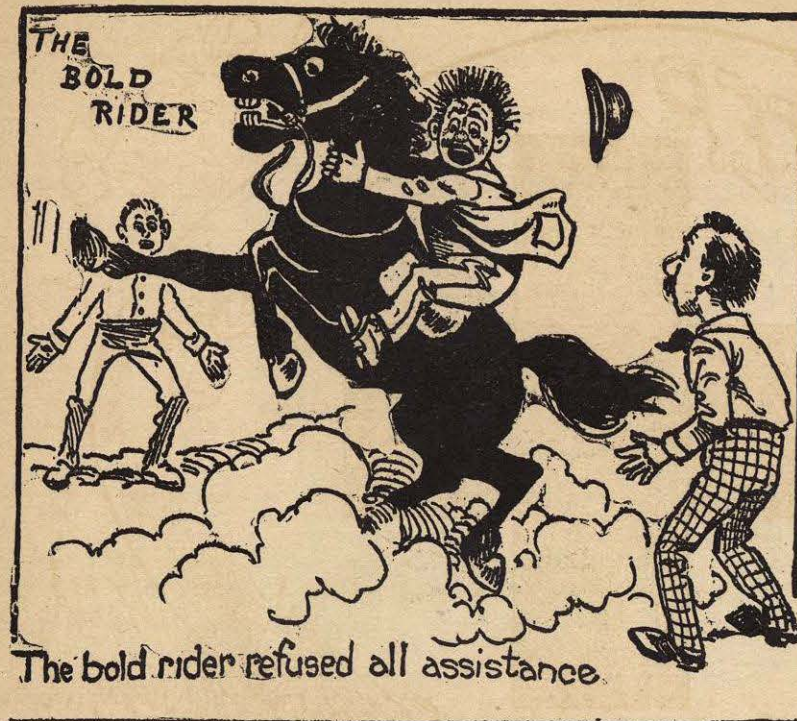
I heard a man boasting the other day about his horsemanship, and among other things told how he had refused all assistance in subduing a vicious horse which failed to throw him from the saddle. Shortly afterwards I met a friend who had witnessed the feat of the bold rider, and who gave me such a humorous description of the incident that it struck me as being worthy of illustration in puzzle form. See if you can find the locality of the accident concealed in the description of the picture.

A Charade.

In finding my first don't be long,
And yet not so long for my second;
My whole affects him at the bar,
To whom little profit is recovered.
Cipher Answer.—2, 18, 9, 5, 6, 12, 5, 19, 19.

A Curious Calculation.

When the Great Eastern was launched and was attracting attention from its great size, a mathematically inclined lunatic who had been in the pin business discovered that if a pin were dropped into the hold of the Great Eastern, and on that day week a second pin, and on that day week four pins, and so on, doubling the number of pins each week, for a year, there would be at the end of fifty-two weeks, deposited no fewer than 4,503,599,627,370,495 pins. Allowing 200 to the ounce, the weight of the whole would be 628,292,358 tons, and to carry them all would require 27,924 ships as large as the Great Eastern, which was calculated to hold 22,500 tons.

A Rebus.

I'm of little importance, so off with my head;
To a foe I might then be the terror and dread.
Decapitate twice, and reverse what remains,

And lo! you've a wandering sprite for your pains.
Cipher Answer.—20, 18, 9, 6, 12, 5.

Anagram Puzzle.

Make one word with the letters *nine thumps*.

Numerical Enigma.

1, 17, 5, 6, 7, an opera.
9, 18, 19, a woman's care.
15, 14, 10, 12, 16, a bone.
5, 2, 18, 12, a relative.
13, 11, 18, a recluse.
My whole is one of Shapespeare's plays.

Some Evolution Puzzles.

In how few changes can you convert *lands* into *hills* substituting one letter at a time and always forming perfect words?

Convert *shoe* into *boot* in three one-letter changes, always forming perfect words.

Convert *beer* into *wine* in five changes, substituting one letter at a time, always forming perfect words.

In how few changes can *north* be converted into *south*, changing only one letter at a time, always forming perfect words?

A Dutchman with a goat and a goose met a milkmaid leading a cow, whereupon the maiden screamed with terror.

"What frightens you?" asked Hans.

"You are going to kiss me against my will," said the coy maid.

"How can I do that with these cranky animals on my hands?" asked Hans.

"What prevents you from thrusting your cane into the ground so as to fasten the goat to it and then put your goose under my pail?" queried the maiden.

"Because that cross-looking cow might hook me," said Hans.

"Oh, that fool cow wouldn't hook nobody, and what is to prevent you

from driving all three of them into my pasture field?" replied the terrified maiden. And right here comes the most interesting puzzle of the series which has yet been presented to our friends; for during the subsequent discussion the following facts developed: They found that the goat and the goose together would eat just as much grass as the cow, so if that field would pasture the cow and the goat for forty-five days, or the cow and the goose sixty days, or the goat and the goose for ninety days, how long would it pasture the cow, the goat and the goose? Early replies are requested, as Hans and Katrina are contemplating a speedy partnership.

THE NECKLACE PUZZLE
BY SAM LOYD.

I WILL TAKE occasion to remark that the fact of some of my puzzles being well known does not imply that every one is familiar with the answers to them, for the correct answers to some of the most popular ones have never been published, and, so far as I am aware, have never really been guessed. I will illustrate this point by presenting as a seasonable problem the "Necklace Puzzle," which I showed several years ago, and which every one who sees it flatters himself that he solves it at once, and yet I do not remember any one who really found the correct answer.

It is based on an everyday business transaction, intended to show how the average mortal goes the wrong way about doing anything which calls for the slightest mechanical knowledge or ability. It is devoid of all semblance of catch or subterfuge, and there is no "missing link" mystery about it, and it is intended to be governed by the ordinary business methods, and yet it was given to all of the leading jewelers and chain makers of New York, who said they would have no use for a saleman or employee who could not see through such a simple transaction, and yet not one of them gave the correct answer.

A lady bought twelve pieces of chain, as shown in the picture, and wished to have them made into an endless necklace of 100 links, as held in her hands.

The jeweler said it would cost 15 cents each to cut and join a small link and 20 cents to joint and cut a large link, and the question is to tell just how much the lady should pay to have the necklace made? That is all there is to it, and it is a pretty problem for the young folks.

A Charade.

Two personal pronouns, if you take
And join them in due order,
An herb will name without mistake,
That scents the garden border.
Cipher Answer.—20, 8, 25, 13, 5.

A Rebus.

Entire I am capital; curtain me and I am capital still; but behead and transpose me and I am looking for capital.

48

THE SOUL OF WIT.
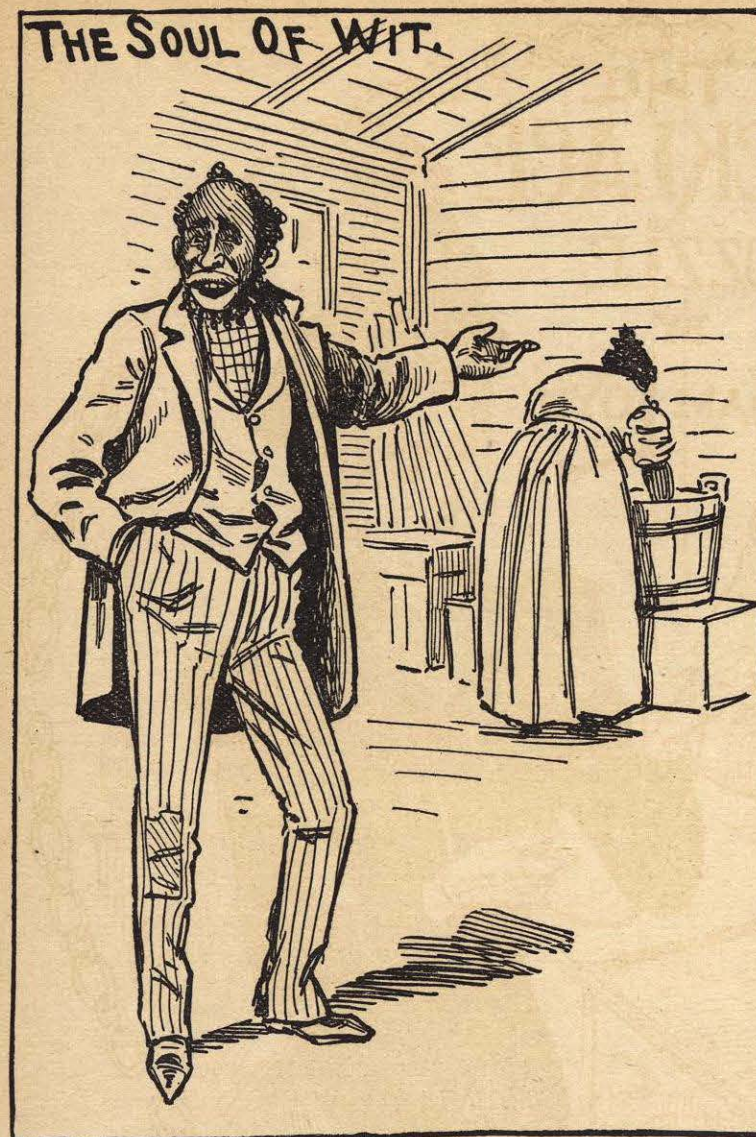
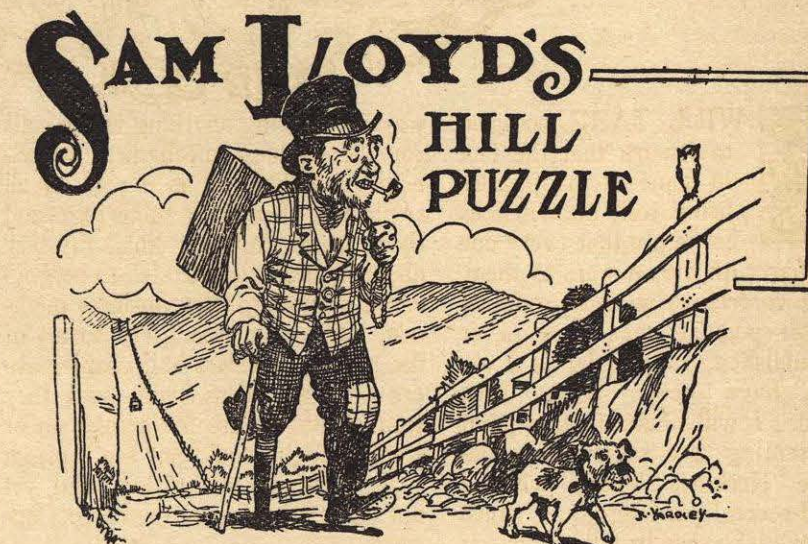This little conundrum is built upon the following incident from real life:

"Dere am no circumlocation nor wasted breff 'bout dat wife of mine when she am in de humor to be brief," soliloquized Mr. Washington Johnsing when he came home a few hours late for the evening meal and found the larder as empty as his stomach.

"What time am it, and war am de cold chicking?" he asked in an introductory way as a sort of feeler. Two questions which naturally called for two replies, but Mrs. Johnsing was not in the humor for protracted conversation, so without discontinuing the little ballad of

"The bee what gits de honey,
Don't hang 'round de hive"

she merely paused to vouchsafe one brief answer, which covered both subjects, and Mr. Johnsing, who read the signs of a rising family barometer, surmised that it would be diplomatic to make himself scarce.

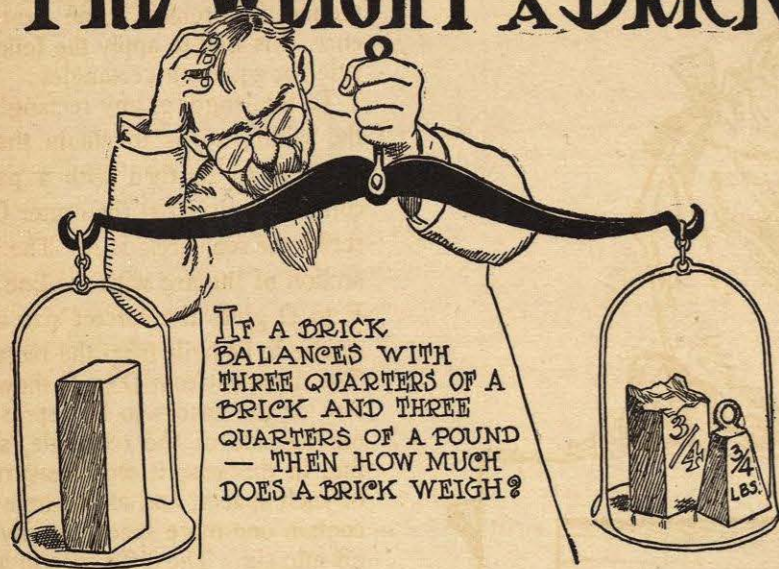It was neither given nor intended by Mr. Johnsing as a conundrum, but that our readers may be en rapport with Darktown sassiety events, we present it in puzzle form for our young folks to study over, to see if they can discover the briefest possible answer to Mr. Johnsing's two queries.

A lady bought a boquet at the florists for thirty-four cents and had a one dollar bill, a three cent piece and a two cent piece. The florist had but two coins in the till, and therefore could not make the change. A bright newsboy came in who had two ten cent pieces, a five, a two and a one cent piece, who showed them how to clear the financial situation so that every one was left with their correct amount of change. How did they manage to do it?

This occurred in the old days when two and three cent pieces were in vogue. The boy has since grown to manhood, and is the cashier of the largest banking institution in the United States.

SAM LOYD'S HILL PUZZLE

Hipity-Hop, the lame peddler, says, that he went up a hill at the rate of one and a half miles per hour and came down at the rate of four and a half miles per hour, so that it took him just six hours to make the round trip. Can you tell how far it was to the top of the hill?

49

THE WEIGHT OF A BRICK

If a brick balances with three quarters of a brick and three quarters of a pound — then how much does a brick weigh?

Here is a little puzzle designed to illustrate the principle of cancellation as applied in algebra to discover an unknown weight from a fractional part of itself. As these kindergarten illustrations are given to instruct beginners in the rudimental principles of algebra, and not for the purpose of puzzling them, we present the explanation with the picture before them.
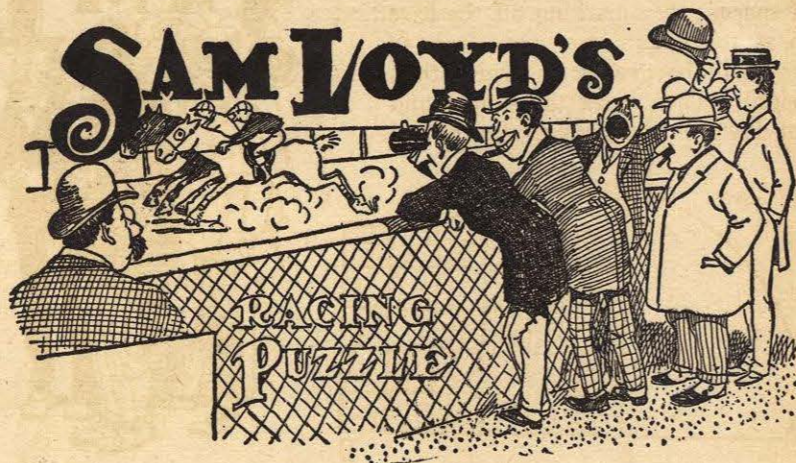
Algebra teaches us that the balance is not affected by removing similar quantities from both sides of an equation, so, in this puzzling little proposition we remove three-quarters of the whole brick and cancel off the three-quarter bat. This leaves the weight balancing with one-quarter of a brick; therefore if one quarter of a brick weighs three-quarters of a pound, a whole brick weighs three pounds. It suggests a possible solution to Uncle Jake's problem of the goose which weighed seven pounds and five-sevenths of its own weight. But then the goose always said there was no answer to the problem.

We almost lose veneration for the big fish story which for several centuries has been the terror of every graduating scholar. The head of the fish was nine feet long, the body as long as the head and tail together, and the tail as long as the head and half of the body. The head being a known quantity we find the length of the body to be 9 plus half of the tail. The tail therefore equals 9 (the head) and half of 9 (4½) which makes 13½ added to half of itself. Here is where the resemblance to the brick problem comes in. The tail is 13½ feet long and half of itself. If one half equals 13½, both halves equals 27 feet. Thus we have the length of the tail as 27 feet, and the body 36 feet, so 9 plus 36 plus 27 shows that Baron Muncausen must have landed a 72 foot fish, and he caught it with a hook.

A Rebus

My first in pageant grand oft forms a part,
My second is the darling of your heart;
My whole within your parlor may be seen,
Where, safe to say, my second oft has been.

Cipher Answer.—3, 1, 18, 16, 5, 20.

A Charade

My first presents an honored female name,
But lovingly abbreviated;
My next a man's, and treated just the same.
Now, if this couple were only mated,
And to the altar duly led,
To be my whole which might be said.

A Rebus

Though of my first the quack may boast,
My next he cannot cure;
Who do my whole along the coast
Should punishment endure.

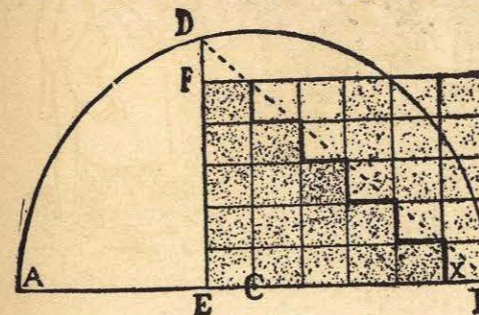Cipher Answer.—16, 9, 12, 12, 1, 7, 5.

A Rebus

My first is a preposition.
My second implies more than one.
My third is a pronoun.
My fourth some people never pay.
My whole is not consistent.

Cipher Answer.—9, 14, 3, 15, 8, 5, 18, 5, 14, 20.

A Rebus

My first, dear ladies, you will find,
Is of my second made;
My whole with pleasure is designed
Upon my first to wait.

Cipher Answer.—2, 18, 9, 4, 5, 19, 13, 1, 9, 4.

SAM LOYD'S RACING PUZZLE

It was told that two lads, each with the same amount of cash, played the races upon Lord Rosslyn's system of placing as many dollars upon the poorest horse as they offer odds of so many dollars against a single dollar. They both won, but when they cashed their winnings and counted their capital, Jim had twice as much money as Jack. Now, who can guess the amounts won?

so they put up different amounts at different odds, although the amount of their bets together was equal to half of their combined capital. Jim backed "Kohinoor" to win straight, while Jack bet on him for second place,

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EVERYONE is familiar with the time-honored puzzle of the ship's carpenter who had to patch a square hole by cutting a 9x16 bit of wood into two pieces. It forms a valuable and interesting lesson in puzzle-making which is well worth knowing as it will enable you to originate or readily solve other puzzles of that class.
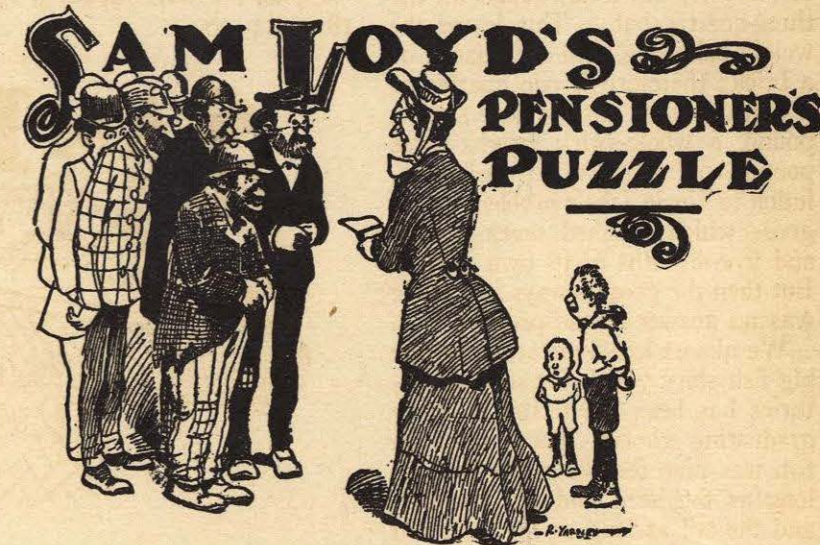
Oblongs of any desired proportions may be formed by measuring the side of a square into a given number of spaces; then marking off the base so as to contain one space less, so they will be greater in width than height. Then mark the square and cut down on the steps as shown, and can be obtained by multiplying the side by the base, which, as in the case of the carpenter's puzzle: 9x16, and 4x9, or 8x12.5 will always produce a square number. By the puzzle process of working backward, we see that the base of the oblong must be divided off into a certain number of spaces, slightly larger, and containing one more space than the side to make the steps form a perfect square.

It is easy to guess the number of spaces for the side and base, but to reduce the problem to an exact science, it is well to apply the following rule for squaring rectangles:

To the length of any rectangle add the width, so as to obtain the distance A to B, then with a pair of compasses placed at the center C, describe the semicircle B A. The intersection of the arc with the line from E to D gives the correct size of the square to be built from the rectangle. The distance from D to F shows the size of the spaces to be represented on the side of the rectangle, so we find in this case it will measure five of such spaces, and as the base must contain one more space, we divide it off into six. The difference in length between E to B and E to D would represent the width of the required spaces on the base line. The above formula solves any rectangle that was built from a square by the carpentering process, but the Euclidian rule which performs the feat in three pieces from any rectangle is to cut on the dotted lines—on the bias—from B to D; slide up the top piece and clip off the little corner X to patch with. It is a beautiful rule with which all puzzlists should be familiar, so now that you understand the principle, can you square the two illustrations given?

SAM LOYD'S PENSIONER'S PUZZLE

the two pieces form patterns for new puzzles to be divided into two pieces to be made into squares. Here is the carpenter and below him the two boards that make two squares.

In solving puzzles of this kind the dimensions of the required square

A kind lady who dispensed charity every week to some needy persons hinted to her pensioners that each would receive two shillings more if there were five applicants less. Each mendicant endeavored to persuade the others to keep away. Nevertheless, at the next meeting every one was on hand, and four new applicants, so that every one got one shilling less.

Can you tell how much each one received?

MILKMAN'S PUZZLE

There are practical problemss in all trades, so it is safe to say that no one is an adept at his business unless he has picked up a few wrinkles which pertain to his calling. Honest John says that what he "don't know about milk is scarcely worth mentioning," but he was nearly flabbergasted once when he had nothing but two ten gallon cans full of milk, and two customers with a five and a four quart measure wanted two quarts put into each measure.

It is a juggling trick pure and simple, devoid of trick or device, but it calls for much cleverness to get two exact quarts of milk into those measures employing no receptacles of any kind except the two measures and the two full cans. You can try the problem with the fullest assurance that it is a legitimate proposition and not a silly catch.
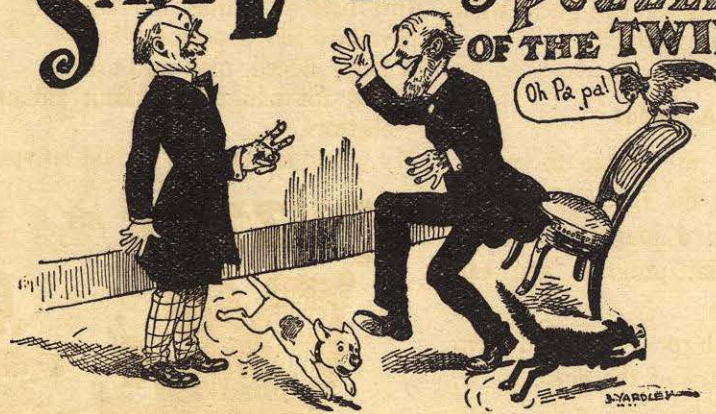
A Charade
My first is one, or many men;
My second comes apace;
My whole's a pledge to be redeemed
Within a certain space.
Cipher Answer.—8, 15, 19, 20, 1, 7, 5.

A Rebus
My first is found in the ocean wave,
As well as in the pit and the mine;
My second below the surface we have
Where never the sun can shine.
My whole the festal board to grace,
But seldom fails to find a place.
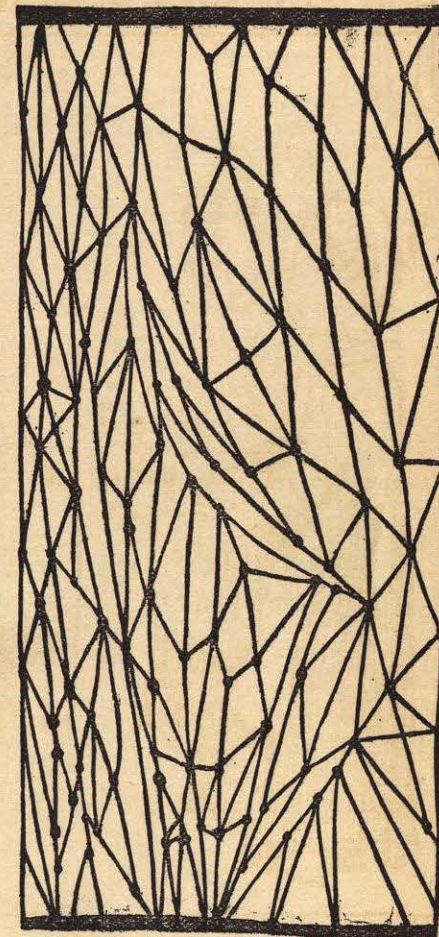Cipher Answer.—19, 1, 12, 20, 3, 5, 12, 12, 1, 18.

A Rebus
Within my first yon gallant crew
An anchor safe may find;
My next, ye fair, indeed, 'tis true,
Without an end may bind;
Without my whole we're surely lost,
Midst wintry blasts and biting frost.
Cipher Answer.—3, 15, 22, 5, 18, 9, 14, 7.
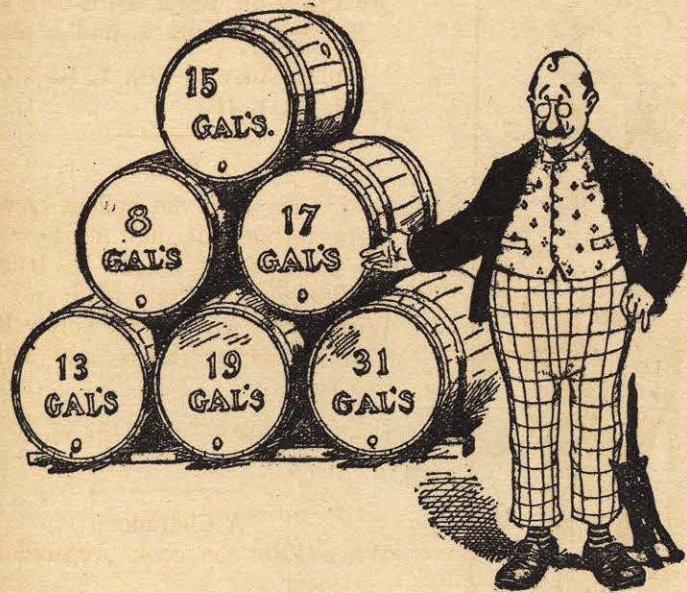
A Charade
When Kate the cook prepared the meal,
My first was in request;
My next is seen in lamb and veal,
A quarter or a breast—
Which with my whole the table graced,
And truly 'twas no wonder,
When at the board each guest was placed,
To see my third thrown under.

A CRYPTOGRAM.
U R A 1 0 0 5 0 0 5 5 N.

SAM LOYD'S PUZZLE OF THE TWINS

Oh Pa pa!

In the exuberance of his joy at the prospect of becoming a happy father in his old age, O'Shaugnessy vowed to settle two-thirds of his estate upon "the boy" and one-third upon the mother, but in case "the boy" should be a girl, then two-thirds of the estate should go to the mother and one-third to the daughter; when it developed, however, that the boy was a twin, which made it necessary to provide for both a boy and a girl, as well as the mother, O'Shaugnessy's mind was not in a state to decide upon the proper way to carry out the terms of his promise. What do our friends, especially the members of the legal profession, who have shown so much interest in these problems, say should be the proper division of O'Shaugnessy's estate?

52

A PUZZLE IN OIL AND VINEGAR

"I started in business with an odd lot of oil and vinegar," said a shrewd speculator. "My first customer bought $14 worth of each, paying twice as much for oil as for vinegar per gallon, and left me but one barrel. Now, see if you can guess what that barrel was worth?"

A Rebus
The limits of my whole to scan
Is far beyond the reach of man;
Behead it and a journey take,
To prove what progress you can make;
Transpose, with rocky sides and steep
I brave the fury of the deep.
Cipher Answer.—19, 16, 1, 3, 5.

A Charade
Suppose that half a dozen of us
Were on a mountain placed;
The prospect thence, without my whole,
Would darkness seem, and waste.
Cipher Answer.—22, 9; 19, 9, 15, 14.

Does any word contain all the vowels? Unquestionably.

A Charade.
My first—yes, I'll straightway confess it—
'Tis a hundred to one if you guess it.
But what shall I say of my second?
Just half of a title 'tis reckoned.
My third has a personal status,
A lady, indeed, may await us.
"Good for naught," without aid or abettors,
My whole is made up of odd letters.

PUZZLE of HOW OLD WAS MARY?
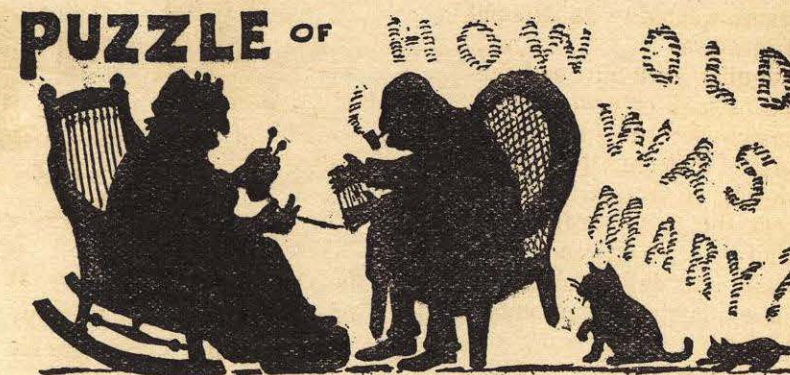
As a companion piece to my problem of "How old was Ann?" and, by way of apology to Sister Mary, who was slighted or ignored in the public controversy of the question, we present a sketch of the reminiscent old couple who were responsible for the discussion: "You see," remarked Grandpop, "the combined ages of Mary and Ann are 44 years, and Mary is twice as old as Ann was when Mary was half as old as Ann will be when Ann is three times as old as Mary was when Mary was three times as old as Ann." How old is Mary?

The Hammock Puzzle.

Miss Carrie Wait broke her hammock, which was suspended between two trees. On the well known axiom that a chain is no stronger than its weakest link, she says that you can readily tell her weight by finding the least number of cords you would have to cut to divide the hammock in two pieces. She says that a cord will hold exactly ten pounds. Then how much did Miss Carrie weigh?

53