his age, added to the mother's equals 70. So the mother's age and seven times Tommy's age equals 70. Then Tommy gets four times as old, and as the father and mother both take on the same number of years, we find that the adding of twelve times Tommy's first age has raised the combined ages of the three an extra seventy years. By dividing 70 by 12, therefore, we find that Tommy's age must have been 5 years and 10 months, the father six times as old, viz., 35 years, and the mother just 29 years and 2 months.

The second player should win in the Daisy game, but the secret is to keep the number of petals divided into two equal halves. If your opponent leads off with No. 1 you draw Nos. 7 and 8. But if he draws Nos. 1 and 2 you draw No. 8, and in both cases you would have the flower divided into two groups of five leaves on a side, as shown below:

Now continue the play by imitating his play. If he draws two leaves on the left side, you must draw the corresponding two from the right. If he draws a single leaf from the left, you draw a single from the right. By this system you keep the number of "pulls" even and must get the last play, which leaves him with the "stump."

Answer to the Great Pool Puzzle.

This complicated mix-up resulted from an expert agreeing to make as many balls as two inferior plays combined. A fourth player came in the game, however, and being a stranger of unknown strength, played upon even terms with each of the other three, neither giving nor receiving odds. The best player claimed that as he beat No. 4, he did not lose. But No. 4, having beaten No. 3, said that he could not be held for the game, while No. 3 maintained that in partnership with No. 2 he had beaten No. 1, and therefore, according to contract, could not be held for the game.

There are other complications which open up different lines of argument, but as No. 4 came in as a free-lance, he is not bound by any private agreements; so, when he made four to the low man's two, he put on his hat and coat and went home. No. 1 then had to live up to his agreement, so, as he had secured but five balls to his opponents' six, the defeat which No. 3 would have sustained was transferred over to No. 1, who should pay for the game.

But there is another view of the matter which would seem to reverse that verdict. No. 3 has scored against No. 1, by special agreement, but as No. 1 has beaten No. 4, he is relieved of all responsibility, and as Nos. 3 and 4 played upon even terms, without any agreement, No. 3 loses, as he can only plead the terms of the handicap when it is a question of paying between No. 1 and No. 3, unaffected by the acceptance of No. 4.

The Free Acres Problem.

Forty-three thousand, five hundred and sixty rails will just inclose that number of acres and is, therefore, the correct answer, which we get at in the following way: We first find the possibilities of one rail, so we cut a twelve-foot rail into four pieces three feet long, and by then cutting again for the four sides find that the one rail would enclose just one foot, so there are just 43,560 square feet in an acre, as one foot is to 43,560, gives the correct answer. Take 43,560 rails, divide by three to get the three-rail high, and by four to get the four sides. We then multiply the side by 12 again to get the length in feet, and find it is still 43,560, which we square to get the total number of feet. Divide again by 43,560, the number of feet to an acre, and we get the correct answer.

Answer to Missing Numbers.

A careful analysis of the sum, as presented in the Mormon souvenir, proves that the figures when restored must have been as follows:

```
749) 638897 (853
     5992
     ----
      3969
      3745
      ----
       2247
       2247
```

Primitive Railroading.

1. Back the R engine far out to the right.
2. Run the R engine on to switch.
3. Run L engine with three cars out to the right.
4. R engine back to the main track.
5. R engine out to the left, with three cars to left of switch.
6. L engine on to switch.
7. R engine and cars to right.
8. R engine pulls seven cars to left.
9. L engine runs to main track.
10. L engine backs to train.
11. L engine pulls five cars to right of switch.
12. L engine backs rear car on to switch.
13. L engine draws four cars to right.
14. L Engine backs four cars to left.
15. L engine goes alone to right.
16. L engine backs to switch.
17. L engine pulls car from switch to track.
18. L engine backs to left.
19. L engine goes forward with six cars.
20. L engine backs rear car on to switch.
21. L engine goes to right with five cars.
22. L engine backs five cars to left.
23. L engine goes to right with one car.
24. L engine backs to switch.
25. L engine goes to right with two cars.
26. L engine backs to left of switch.
27. L engine draws seven cars to right of switch.
28. L engine backs end car on to switch.
29. L car goes to right.
30. R train backs to right.
31. R train picks up its four cars and skips.
32. L train backs to switch.
33. L train picks up its third car and goes on its way rejoicing.

Dollars and Sense.

U. S. A. money *can* be treated the same as English money, for if you take any row of figures and reverse them and deduct the smaller from the greater it will leave 99 or the multiple of 99, viz.:

$8.57	9.31	4321
7.58	1.39	1234
.99	7.92	3087

Answer to Counting Coins.

Heindricks had a 25-cent piece and a dime, Claus had a $2.50 gold piece and a 2-cent piece, Karl had a dime and a 3-cent piece, and at the end of the play Heindricks had the 3 and 2-cent pieces, which would show a loss of 30 cents; Claus had the $2.50 gold piece and one dime, which show a profit of 8 cents, while Karl has the 25-cent piece and one dime, which shows a profit of 22 cents.

In the remarkable story of the three Dutchmen and their wives who came to town to buy hogs, it was told that each person bought as many hogs as they paid shillings per hog, and that each man spent three guineas more than his wife; likewise that Hendrick bought 23 more hogs that Caterin, and Claas bought 11 more than Geertring. The puzzle was to pair the husbands and wives as proven by their purchases. It results in a curious complication of extracting the square roots of the pigs and wives which finally results in showing that Geertring bought 1 little pig for 1 shilling, and that her husband who must have been Cornelius bought 8 hogs for 8 shillings each. Caterin bought 9 for 9 shillings each, while her husband Claas bought 12 hogs for 12 shillings each. Anna bought 31 large hogs for 31 shillings each, while her good man Hendrick by name, bought 32 hogs at 32 shillings apiece.

The Diamond Robbery.

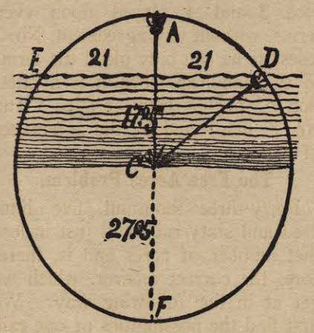
The second arrangement of the diamonds, with two gems missing, is as follows:

Answer to Puzzling Letter.

Our young folks have come nobly to my aid in deciphering that cryptogramic letter from my boy on the farm, and tell me that instead of being a Ku Klux notice from the Molly McGuires, it is merely a statement that "the season is backward for potatoes!" The cc on is (backward) 4 put oooooooo (eight o's). All of which is a great relief to an anxious parent.

The Water Lily Problem.

Euclid says: "That when two chords of an arc intersect within a circle, the products of the parts of one will be equal to the products of the parts of the other." Therefore in the following illustration the surface of the water forms the chord of one arc, and as the two parts were given as 21 inches, 21x21-441.



The stem of the lily forms the other intersecting chord, and as its height above the water forms one part of the chord, that part, 10 inches, multiplied by the other part, must be the same as the 441 inches obtained by the parts of the other chord. So divide 441 by 10, and we get 44.1 inches as the other part of that chord. Adding the 10 and the 44.1, we get 54.1 for the total length of the chord from A to F, which is the diameter of the circle. This we must halve to get the radius, 27.05, but as the flower stood ten inches above the surface of the water, we must deduct that ten inches and we will find that the lake was only 17.05 inches in depth.

The Missing Number.

As the digits add up 45, which in turn make 9, the sum must also equal 9, therefore we know that 8 is the required figure.

Missing-word Anagram.

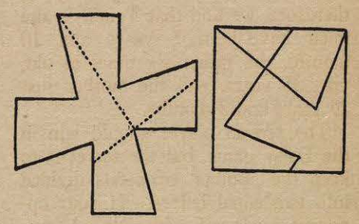
Vile, evil, veil, Levi and live.

Answer to the Hot-Cross-Bun Puzzle.

The wording of the song of the hot-cross-bun man shows that there must be an even number of children, as there were just as many daughters as there were sons. Seven pennies were to be invested in buns at the rate of a penny, two for a penny or three for a penny. The supposition is that there were three boys and three girls, so by purchasing six buns two for a penny and twelve three for a penny each child could then receive buns according to programme, one half-penny and two three-for-a-penny buns to each. Despite the various attempts to solve the puzzle in other ways, this will be found to be the only answer.

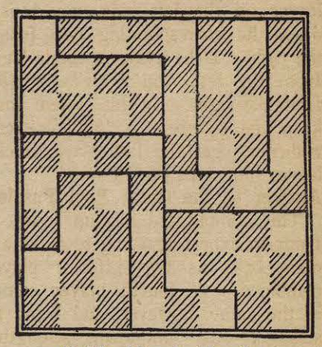
Ancient Order of Iron Cross.

The following illustrations show how to cut the cross into only four pieces:



The Battle Royal.

The accompanying illustration shows how the chess board which the young Dauphin broke over the Duke of Burgundy's head was restored by the court carpenter.



Guido Mosaic Puzzle.

This puzzle is based upon that famous 47 problem of Euclid which proves that the squares of the side and base must equal the square of the hypothenuse. We here see that 3 square and 4 square equal 5 square:

Problems of History.

To that curious study of the nine ponderous volumes of Hume's History of England which were to be arranged upon the two shelves so that the two rows of figures might be made to represent fractions equivalent to one-half, or one-third, one-fourth, one-fifth, one-sixth, one-seventh, one-eighth or one-ninth, the following clever arrangements have been received as fulfilling the conditions:

$$\frac{6729}{13458}=\frac{1}{2},\quad \frac{5832}{17496}=\frac{1}{3},\quad \frac{4392}{17568}=\frac{1}{4},$$

$$\frac{2769}{13845}=\frac{1}{5},\quad \frac{2943}{17658}=\frac{1}{6},\quad \frac{2394}{16758}=\frac{1}{7},$$

$$\frac{3187}{25496}=\frac{1}{8}\ \text{and}\ \frac{6381}{57429}=\frac{1}{9}.$$

Of course, some of the numbers can be slightly varied and yet give the same results.

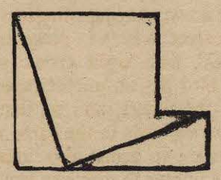
In that bottle puzzle, only two burglars were in view, but it does not take a Sherlock Holmes an instant to prove that there were three burglars in this gang; there were 21 pints of wine to be divided and 24 bottles, and as three is the only number which will divide those quantities, we know that there must have been three men, so we will go on with the puzzle part of the question, which even at this stage of the game calls for a sober brain.

One burglar takes 3 full quarts, 1 empty quart, 1 full pint and three empty pints. Each of the others take 2 full quarts and 2 empty ones, 3 full pints and 1 empty one, so each man gets three and a half quarts of wine, and four large and four small bottles.

Poetical Decapitations.

Growing, rowing, owing, wing.
Trifling, rifling, I fling, fling.
Caprice, a piece, rice, ice.

Pythagora's Classical two-square problem solves itself by the application of the rule which shows that the combined squares of the smaller sides of a right-angled triangle are equal to the square of the largest. Taking our scissors we cut from A to B, which produces a triangle whose base and elevation are equal to the sides of the two squares as given in the puzzle. The line of the hypothenuse, therefore, should show the dimensions of the large square which combines the other two squares. We therefore cut from A to C and clip off another triangle and fit the three pieces together so as to form the large square A B E C.



This rule holds good to give the combined size of any two squares:

Answer to Fo'castle Yarns.

In reply to those conundrums of the old salt who asked Neptune what he would do if all the seas were dried up, that jolly old sea god replied: "Really, I would'nt 'ave an ocean." In reply to the clever conundrum: "Why is a man looking for the philosopher's stone like Neptune?" the jolly tar's quaint reply was "Because he's a sea king what never was."

Man With the Hoe.

There being just twelve rows, as shown in the picture, Hobbs would drop six rows in 120 minutes, and, we will then say, could cover at the rate of a row in sixty minutes, so he would drop and cover his six rows in eight hours. Nobbs, according to statement, would drop his six rows in 240 minutes, and could cover them at the same rate of speed, so he would also finish his work in eight hours, so each man would be entitled to $2.50 for eight hours' work.

The "Mysterious properties of 9" may be applied to test the correctness of subtraction by finding the "root" of the minuend and subtrahend as well as remainder and the difference must be equal to the root of the remainder. For example:

From 6894321 = 6
Take 2960864 = 8

Leaves 3933457 = 7

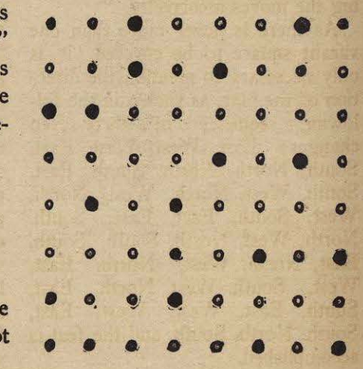
As 8 cannot be taken from 6 we will add 9 before deducting the root 8; this leaves a difference of 7.

Answer to the Boxer Puzzle.

This odd little puzzle-game proved to be replete with opportunities for surprises and fine points of play, as shown in the following answer, which proves that the first player should score seven boxes by beginning with a line from G to H. If the second player then marks from J to K, the first will score two boxes by marking from K to O and P to L, and will then play the waiting move, L to H, instead of scoring two more boxes. The other player now scores the two boxes by G and K, and is then compelled to make a play which gives the first player five others. If, when the first player marks from G to H, the second player marks C-G, B-F, E-F, and then makes the waiting play of M-N, which scores four more boxes. It is this sharp play of giving your opponent two boxes so as to then get four which constitutes the pretty points of the game.

Answer to Picket Posts.

To that odd little lesson in military tactics wherein it was required to place sixteen checkers upon a board of sixty-four squares so that no three should be in line from any possible direction, the accompanying diagram shows the correct answer. The stipulation of beginning by first placing two men in the center of the board bars out many answers which would otherwise be quite as correct as the one here shown:

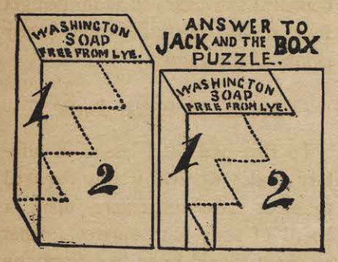


That puzzling return trip from the Klondike proved to be no easy task for our young puzzlists, and but few succeed it getting out of the woods with their treasure. For the benefit of such as could not escape the endless whirlpool of numbers which held them in its vortex we will say that the only escape leads through the backward and forward sequence of S. W. to 4, S. W. 6, M. E. 6, M. E. 2, M. E. 5, S. W. 4, S. W. 4, S. W. 4, and a bold strike via N. W. to liberty!

Those who failed to master it readily discovered that one false step at any stage of the game throws one into the whirlpool from which there is no egress.

Answer to Jack and the Box.

The following illustrations show how to cut the box into two pieces which will fit together and form a perfect square. Cut on the dotted lines, as shown in Figure 1, and the pieces will fit together to form a square, as shown in Figure 2.



Answer to the Fore and Aft Puzzle

This curious and interesting puzzle is given in the puzzle books to be solved in fifty-two moves, but many of our clever puzzlists succeeded in demonstrating the possibility of performing the feat in forty-seven plays. Some attempted to give a shorter method, but erred in counting the moves incorrectly.

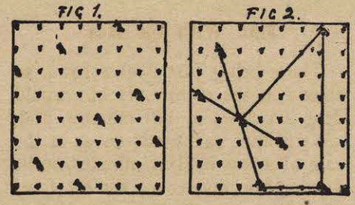
As there is never more than one vacant square to be covered, it is only necessary to mention the direction of the play, as shown in the following sequence of forty-seven changes: East, West, West, East, South, North, North, South, East, South. West, North, West, North, West, South, East, East, South, North, West, North, South, South, East, North, West, North, East, West, South, West, North, East, South, East, West, West, East, South, North, South, and the feat is accomplished.

The Dewey Pillow puzzle reads: Good people always die young.

Answer to Crows-in-the-Corn Puzzle.

The accompanying diagram shows the correct way of picketing the cornfield with eight crows so that every bird has an unobstructed view of all the others, and so that there are no two birds in the same row or diagonal. It being also impossible for the hunter to discover any standpoint from which he might get a line-shot on three birds.

The second diagram shows one of the many answers submitted by our chess experts who attempted to prove that the puzzle is similar to the famous problem of placing eight queens on a chess-board so that no one attacks another. Chess players, however, know more about rooks than crows, as the hunter readily discovers that two of the shots illustrated would wing three birds, while in the first diagram no such feat is possible if the exact center of the points are calculated upon.



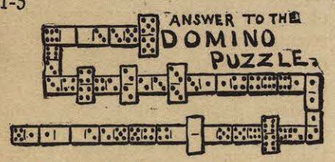
The Secret-of-Success Puzzle.

"Don't do business on tick," said the clock. "You lack push," said the button. "Don't be led," said the pencil. "Take pains," said the window. "Whoop your business and never lose your head," said the barrel. "Don't do a light business," said the lamp. "Look alive and be sharp not mild," said the cheese. "Keep your eyes peeled," said the potatoes. "Have plenty of sand," said the sugar. "Don't get blue," said the indigo. "Never cut price nor lose your temper; be sharp," said the knife. "When you see a good thing stick to it," said the flypaper. "Keep cool," said the refrigerator. "Never get stuck on yourself," added the tack. "Keep your hands busy and never sell on time," suggested the clock. "Yes, C. O. D. is the best," said the salt fish. "Beware of the beats," remarked the vegetables. "Yes, look out for the skins," said the banana, "for as the mucilage says, 'It's bad business to get stuck.'" "Prices should not be too steep," remarked the Oolong, "for honest tea is the best policy." "Yes, make your prices draw," said the stove; "give every one a warm reception, and always honor your draughts." "Bills should be met," said the chicken. "And should be promptly reseated," added an old chair. "Meat your customers with a smile," said the corn-beef. "Try to soot everybody," suggested the stovepipe. "It is your winning weighs that have the most weight," said the scales. "But don't get caught," added a saucy little sardine. "No, you mustn't lye," said the potash. "Yes, do write," interposed the pen. "Polished manners are very effective," said the blacking. "It shows you are well bred," remarked the flour. "Give your patrons no grounds for complaint," remarked the coffee. "Keep in the swim," suggested the smoked herring. "Give greater bargains every day," said the nutmeg. "That's a great idea," remarked the stove, "but don't have too many irons in the fire." "Nor count your chickens before they are hatched, for it's too bad to be beaten," said a fresh egg. "Rise early and work," suggested the yeast. "Yes, the sooner you are out of bed the better," remarked the asparagus. "Loafing makes you stale," said the bread. "It gives you a seedy look," suggested the orange. "Raising the dough is more important, as you may need it," said the baking-powder. "Look after the scents, the dollars take care of themselves," remarked the limburger. "That's right, look after the little leeks," said the onions. "Be up to date," suggested the calendar. "It is best to reflect seriously," said the looking-glass, "for as the cement says, 'It is never too late to mend.'" "Well, well," said the ink, "if you want to suck seed you only waste thyme on a navel orange." At this all the articles laughed, and the grocer awoke, an astonished Budweiser man.

The labor strike puzzle conceals the name Newark. In the "noted" puzzle we discover "Eldorado."

In the problem of the hounds and the hare, the hounds gain 6 rods in every 21. They must therefore run as many times 21 as 6 will go into 96. Therefore $96 \div 6 = 16$. $21 = 336$ rods.

Patience and perseverance, combined with cleverness and a certain amount of luck, will enable a good domino player to demonstrate that—contrary to popular belief—200 points might possibly be scored in a game of straight muggins. The problem ran the gauntlet of the mathematicians and experts some years ago, when, by careful analysis, the limit was raised to 195. But I afterwards discovered that by one pretty stroke of play, which seemed to have been overlooked in the discussion, five more points could be scored, which struck me as being worthy of being presented in puzzle form. The play may be slightly varied, but is substantially as follows: First lead the three-two, and continue to build up so as to present the following lines: 5-5, 5-6, 6-6, 6-2, 2-1, 1-1, 1-4, 4-2, 2-2, 2-3, 3-3, 3-1, 1-6, 6-4, 4-4, 4-3, 3-6, 6-0, 0-3, 3-5, 5-0, 0-0, 0-4, 4-5, 5-2, 2-0, 0-1, 1-5



Answer to Disputed Claims.

The finding of two triangles of equal area, such as base 40, elevation 48, and the hypothenuse 148, which would contain the same area as one with an elevation of 80, a base of 84 and the hypothenuse of 116, is not difficult. To find the third right angled triangle which will also contain 3,360 square feet is so difficult that such noted mathematicians as Euler and LaPlace are said to have claimed that it was impossible to discover a fourth.

Here is the third: Elevation of 30, base 224 and hypothenuse 226.

CHARADE—Steel-yard.

Sam Loyd's Puzzle.

The chances are 125 to 108 that you will lose, for if you select one number and then play all the chances 125 would lose and 81 would win. But as there are 15 throws which would win an extra $1 and one triple throw which would win an extra $2, the correct answer is that you would lose $125 to win $108. The part of winning $108, which is half of the possible 216 chances, has led writers on the subject into the error of saying that the chances are even. The error appears when you play on all six numbers, then you get your money back if three different numbers appear, but if three of a kind turn up you get back only $4 for an outlay of $6.

Regarding the answer to the Crazy Hatter's conundrum as to "why is a writing desk like a raven?" there is no absolute certainty of any answer having been intended, as Lewis Carroll never vouchsafed any replies to the curious problems pertaining to Alice's trip through Wonderland; nevertheless, my acquaintance with Carroll and his peculiar traits, convinced me that it was not altogether a haphazard query. My own guess, following the alliterative style which characterizes the entire work, would be "that the notes for which they are noted are not noted for being musical notes"; nevertheless, there is considerable scope for ingenuity and cleverness, as other answers, equally as good or better, might be suggested, like "because Poe wrote on both," "Bills and tales are among their characteristics," "Because they stand on their legs," "Because they conceal their steels" or "Ought to be made to shut up," etc., etc.

Concealed Geography.

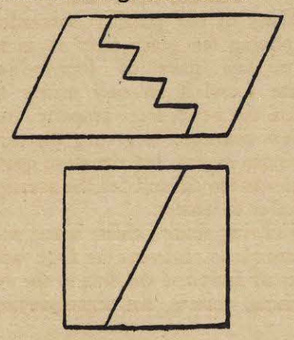
71, Hebrides; 72, Arno; 73, Sorrento; 74, Reading; 75, Borneo; 76, Basel; 77, Po; 78, Orleans.

Aesop's Eagle.

There were three traps to avoid in this puzzle: The circumference of the earth at the latitude given would be but 19,055 miles. Gaining 500 miles per day would require 39 days, but having gone around the world gained one day. Then the old principle of the frog in the well puzzle comes into play, as he does not have to fly back when he once gets there. Ans., Friday, Feb. 7th.

The New Year's Resolution reads "Be always upright, honest and industrious."

How to make Diamonds is shown in the following illustrations:



News Boy's Puzzle.

The Joneses won out by 220 papers.

A Riddle.

Auctioneer: Concealed geography conceals "Easton."

The old time proverb rebus reads: "Early to bed and early to rise, makes a man healthy, wealthy and wise."

All About a Penny.

We see in the illustration: Hare, Date, Temple, Tulips, Neck, Star, Brow, Eye, Lids, Lash, Crown, Month, Liberty, Copperhead, Locks, One Cent by the U. S. A.

Susie paid 5 cents for silk, 4 cents for worsted.

In reply to the question as to which of the States can be spelled with two letters, it may be said that oO represents o high o, while we all know that I O A and X a c (Ten a c) require but three letters each.

Arithmetical Puzzle.

99 9/9 = 100.

No. 1907 was Mashed Potatoes.

Couldn't Tell a Lie.

There were originally 8 in the box.

The Inspector's Puzzle.

Articles weighed on false scales will register out of their true weight in the same proportions as the lengths of the arms from the fulcrum point are to each other. The rule is:

"Weigh the articles on one side of the scales, then upon the other. Multiply the two results together and the square root of the product will be the true weight of the article."

On the long arm one pyramid equaled two and two-thirds cubes, while on the short arm it weighed one-sixth of a cube.

One-sixth multiplied by two and two-thirds equals four-ninths, the square root of which is two-thirds.

Therefore, a pyramid weighs two-thirds of a square.

Assuming that a pyramid weighs one ounce, a cube would weigh one and one-half ounces, and the answer to the question, "What should have been the true weight of the eight cubes?" is twelve ounces.

Answer to Candy Puzzle.

The children must have bought three packages of fudge at four cents each; fifteen chocolate drops for seven and a half cents and two gum drops to make up the extra half cent.

Answers to Puzzles.

In False Alarms the locality was "Athens."

The Little Brown Jug.

To coin an expressive term which explains the situation, I would say that the problem is best solved by the principle of symmetrical equivalents, which resolves a geometrical form into a certain number of parts which can be duplicated. By counting the number of branches, it will be found that there are, as a matter of fact, but five starting points to be analyzed, which will give a total of 372 ways of spelling red rum, which reaches the center.

Then comes the curious feature of the puzzle, although the same is very self-evident, for there must be just as many ways of getting out as there were of reaching the center, so the square of the sum 372x372 gives the grand total of 138,384 ways without any two being alike. The trick of the puzzle turns upon the fact of there being a dozen R's in the *middle* of the diagram, which may be used as starting and finishing points.

Answer to Squaring Accounts.

In that story of the temperance town we find that the agent started with $12 cash and $59.50 in liquors, and in buying $283.50 more increased his stock to $343 wholesale. Upon this he put an advance of 10 per cent. for a retail profit, which raises the value to $377.30. He sold $285.80 at retail, which leaves $91.50 on hand, as shown in the picture, which balance would be worth at wholesale, $83.18. The profit on the sales would amount to $25.98, which, added to the $12 cash and $59.50 liquors with which he started, would amount to $97.38, from which we deduct his commission of $14.29 to leave $83.19 for the balance on hand, which shows the accounts to be correct within two cents.

Hope cheered the pilgrim in that rebus puzzle.

The Pony-Cart Puzzle.

The circumference of the track described by the outer wheels of the cart in making the turn may be solved mentally as follows:

For the outer wheel to go twice as fast as the inner, the circumference of the outer circle must be twice that of the inner. As five feet is equal to half the radius of the outer circle, ten feet must be the radius and twenty feet the diameter of the outer circle. 3.1416 times twenty feet gives us 62,832 feet as the circumference of the circle described by the outer wheel.

That missing word is "brigand," so the sentence reads: The brigand placed the loot in his brig and escaped.

Answer to Smith's Age Problem.

It was mentioned that this statistical problem was sprung upon her husband on the 29th of February, so, as our sharp puzzlers readily discovered, it must have been February 29, 1896. When they first met at an earlier stage of the game, he was three times her age, but on that eventful leap-year day she was the age he was when first they met. Mathematicians and others deep in astrology and the occult sciences demonstrated that Tom was fifteen and his sweetheart five when first they met, so on the 29th of February mentioned she would be fifteen and he would be twenty-five. So, when she is forty-five he will be fifty-five, which would make their combined ages amount to the required century run.

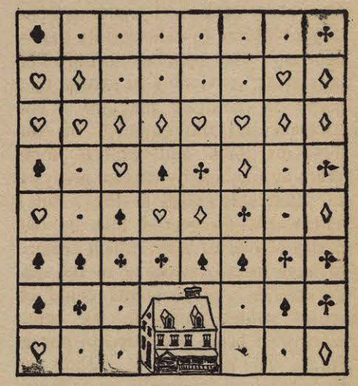
Some of our scientists, however, who reasoned that Tom was twenty-five on the 29th of February, 1896, fell into the error, as did Tom himself, in thinking that 1900, which came four years after, was a leap year, which would make Tom just 29 years old. By some odd freak of the calendar, as explained by the dream books, 1900 was not a leap year, so the next leap year did not occur until 1904, on which eventful occasion Tom was 33 years of age and was free once more to continue his course of statistical training, and that good old rule of dividing the year by 4 to determine whether it is a leap year or not was again in force.

The traveler by express went via "Bolivia."

Peaches and Pears.

Many of our puzzlists succeeded in placing ten peach trees so as to form five rows of four-in-line. Some found it an easy matter to locate the peach trees properly, and a few succeeded in getting the persimmons in line, but the plum question was too difficult for the average puzzlist to master.

Utilizing spades, clubs, hearts and diamonds to represent the four varieties of fruit and the dots to the remaining quinces, the accompanying diagram gives the answer to this remarkably difficult puzzle.



Puzzle of the Harlem Goats.

In Professor Blumgarten's unique satire upon the workings of the Peace Congress, he gave by way of illustration one of George Abercrombie's curious deductions regarding the strength, or resisting power of a goat's skull. The distinguished scientist, who lived before the advent of the Society for the Prevention of Cruelty to Animals, says: "By repeated experiments I have found that the strength of a blow equal to the momentum of 30 pounds falling 20 feet, will just break the skull of a goat, so as to kill it."

The problem was to determine the relative speed of the two animals necessary to kill both. Of course, the problem turns upon the well-known law that a heavy body falling from a state of rest, descends in the first second of time 16 feet and 1 inch, after which it increases in speed in a regular geometrical progression, from which we compute that the 30 pounds falling 20 feet, would give a blow equal to the contact of a 57-pound goat running at the speed of 9.4395 feet per second, meeting a 54-pound goat coming at the rate of 9.9639 feet per second, which would therefore just kill both of the belligerent animals. Of course, it is assumed that the goats strike with equal momentum and 'drop dead in their tracks,' otherwise the velocity of either goat might vary from O to double the velocity given.

In the "naughty" puzzle six straight lines will make the naughts read, "Good dog do go."

That saving life puzzle conceals the name of Astoria.

That philanthropist thought the old horse loved to respond to the

call of whoa, but Sydney Smith's puzzle turned upon the word "class."

Tootsey Wootsey resided at Babylon.

His two stock jokes were in telling that the boat was the Maid of the Mist, and the "cat erect" was like the falls of Niagara.

That big pain occurred in Boston.

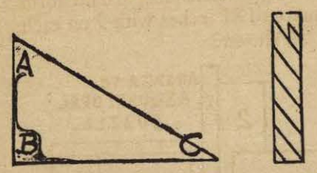
Harry's donation motto says, "a fool and his money soon part."

Answer to Bunny Puzzle.

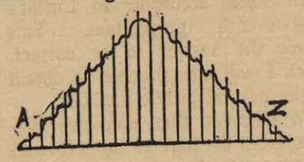
Here is the way we discovered the mischievous little white bunny which overturned one of the jardineres of rare exotics. You can see the cause of the catastrophe in the center between the two vases nibbling at the leaf.

The Old Beacon Tower.

There were two tricks or pitfalls into which mathematicians and puzzlists fell. It is a simple matter to prove that the length of the hand rail would represent Pythagoras' line of the hypothenuse of a right-angled triangle. Take a triangular piece of paper and wrap it around a pencil and B to C is the length and A C the hypothenuse.



Now, in the Beacon Tower problem the height is 300 feet, and, as the diameter of the circle is 23 feet 10½ inches, which multiplied by 3.1416 would give a circumference of 75 feet, which four times around would also give 300 feet as the length of the base, and the rail would be equal to the length of the line of the hypothenuse, which, however, is the first of the catches, for some of the puzzlists and mathematicians forgot that it takes just as many pickets for the base as it does for the hypothenuse, according to the old puzzle of the pickets of a fence which goes over a hill:



Whether you go from A to Z direct on the level or over the hill there are just 35 pickets, just one foot apart. So in the problem of the Beacon Tower, as four times the circumference would be 300 feet, there would be 300 pickets plus 1 for the top, which is the second point of the problem which so many overlooked, and which makes the correct answer to the puzzle to be 301 pickets or steps.

Charade-Mama.

That Indian is "a well read man" and the inscription tells you to "th in k twice before u speak."

The toboggan puzzle conceals the name Canada.

The Corner-in-Wheat.

In that odd bit of encyclopedia lore, regarding the agreement made by Sheran, the Indian King, to reward Sessa for inventing the game of chess by giving him one grain of wheat for the first square, two for the second, four for the third, etc., always doubling up to the 64th square, it was asked to tell how many grains of wheat would be required to pay the debt.

It is a question of simple multiplication for anyone who can do sixty-three sums without an error, and when we see the answer it looks easy and yet no human mind realizes or grasps its immensity. It was easy for Sessa to compute his store of wheat, but to count the grains was a different matter.

A trillion is a small number if you say it quick, yet we cannot grasp it. According to the old legend the "Wandering Jew" was to walk the earth until he counted a trillion. If he could count one a second for ten hours a day it would be a 75,000 year contract. So do not waste any brain energy in endeavoring to take in the immensity of 18,446,744,073,709,551,615 grains of wheat!

1— 1 "In this problem of
2— 2 doubling each succes-
4— 3 sive square until 64
8— 4 squares are reached
16— 5 would give us a table
32— 6 running like this, which
64— 7 is known as an arith-
128— 8 metical progression.
256— 9 To continue this up to
512—10 64 and then adding for
1024—11 the sum total becomes
2048—12 somewhat laborious, es-
4096—13 pecially when the upper
8192—14 numbers are reached.
16384—15 It then becomes a ques-
32768—16 tion, 'Can this be
65536—17 reached by a shorter
etc., etc. method?'

A glance at the table shows certain characteristics, that the amounts bear certain relations to each other. For instance, the 3d and 5th terms multiplied together give us the amount for the 7th term; the 6th and 12th for the 17th, the 7th by the 7th for the 13th and so on infinitum, which seems to give us a rule that by adding the numbers and subtracting one we get the number of the term they produce.

According to the above the 8th term (for instance) multiplied by itself would give us the 15th term (8+8—1=15), that is 128×128=16,384, for the 15th term.

Now, according to the rule, the 15th term, multiplied by itself, would give us (15+15—1=29), the 29th term, that is 16,384×16,384 equals 268,435,456 for the 29th term.

Then the 29th term multiplied by itself would give us (29+29—1=27), the 57th term, or, in other words, 268,435,456, multiplied by itself gives 72,057,594,037,927,936, for the 57th term.

Still applying the rule, multiply the 57th term by the 8th (57+8—1=64), for the last or 64th term, that is 72,057,594,037,927,936×128 gives 9,223,372,036,854,775,808 for the last term.

Now all of the 64 terms must be added together. This would be a pretty big addition, enough to frighten the average school boy. This is overcome by a very simple rule: The sum of an arithmetical progression is found by doubling the last term and subtracting the first term from it, thus we can easily find the sum total to be 18,446,744,073,709,551,615 kernels demanded by this checker-board proposition."

Kate's charade turned upon the word potatoes.

The milkman's retort tells us that the chair, like his bill, should be re-seated. His cow gives milk but

the chair "gives way." The chair, like the dress, should be sat in.

The bad boy dreamed of Lewiston.

Santa Claus started off with his left foot to chase that turkey and if you follow in his tracks in the snow counting left foot, right foot, etc., you will find he has gained one step somewhere. This can only be done by going round the first circle *twice*, so he has made four complete turns to arrive at his present position!

Answer to Bird Puzzle.

The question as to whether a bird flying round in a closed box would increase or lessen the weight of the box has been discussed pro and con, by some of our correspondents, but the preponderance of opinion is so overwhelmingly in favor of the weight of the bird being added to that of the box, that it would be difficult to present reasonable argument for the other side, despite of the popular belief that such would be the case. The propounder of the question cited the familiar problem of the fish in a vase of water, but there are two versions to that problem; the one which asks why a fish put into a tank of water does not increase its weight is a silly joke, as it does increase the weight, unless the tank being full to the brim and enough water overflows to equalize matters. The problem of the fish is not the same, as the weight of the fish is the same as the water and the fish floats. The bird is heavier than the air and supports itself by striking down upon the air and the power of such strokes would undoubtedly show on the dial the difference in weight between the bird and its displacement of air.

The man with the monkey was in Cuba.

Cross-Country Running.

First to give the answers: It may be said that the hound runs back 111 yards 1 foot and 1 and 1/11 of an inch to the left-hand bridge, and thence across the field on the hypothenuse line 713 and 7/11 yards.

This shows the hare to be 850 yards from the home flag going by either route. Mathematicians show that the total length along the canal would be 111 and 4/11 yards. Plus the 25 yards to the hare, plus the 250 yards to the right-hand bridge, would make the distance from bridge to bridge 386 and 4/11 yards as one side of a triangle, with 600 yards as the other, which gives 713 and 7/11 yards as the lien of the hypothenuse, according to Euclid's forty-seventh proposition. This proves the answer to be correct, which I will now proceed to obtain by the natural puzzle method.

To discover that unknown distance from the hare to the left-hand bridge, when the two routes are of the same length, merely divide the base of the triangle (that 600) by the distance of the hare to the bridge, 250, and to the quotient add 2, and with that sum once more divide the base, and the quotient will be the distance from the hare to the left-hand bridge, viz., 250)600(2.4, to which we add 2—4.4, which, divided into the 600, gives 136 and 4/11 yards as the distance from the hare to the left-hand bridge, and as the two routes are of equal length it would make the cross-lots cut 713 and 7/11 yards, as previously mentioned, and we have not stumbled over any square roots on our run.

Answer to Golf Puzzle.

In the description of golf problem, it was explained for the benefit of the few, if such there be, who know less than ourself about this exciting pastime, that there were nine holes located respectively 150, 300, 250, 325, 275, 350, 225, 400 and 425 yards apart, which were to be reached in succession by two strokes of different lengths played directly towards the holes. Some of our clever players prove that the feat can be performed in 26 shots by using a 150 yard drive and a 125 yard approach.

In that confusing bit of Celestial financiering, which called for the price of a fat puppy dog for 11 bits, when 11 round coins are worth 15 bits, 11 square ones 16 bits, and 11 triangles 17, such of our puzzlists and mathematicians as are up in Oriental laundry lore report that the transaction would be consummated by paying 7 pieces of cash with round holes and one piece with a square hole. The total value of the eight pieces would be exactly 11 bits. The amount in our money would be such an insignificant sum that it could hardly be estimated, and as I don't believe anyone would care a bit about it, we won't try.

The Mixed Tea Puzzle.

There is a cute puzzle method for solving such puzzles of this kind, which shows that two square boxes, the one exactly 17.299 inches inside measurement, and the other 25.409 inches square on the inside, will be equal to twenty-two tea chests, exactly 9.954 inches square. So the proportions of green and black teas must have been mixed in the proportions of as 17.299 is to 25.469.

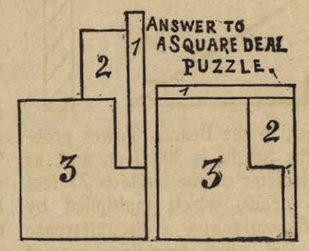
That Grammatical puzzle may be entirely changed by substituting the letter S for the L at the very beginning, so it reads: "Set the rich, etc."

The Time Puzzle.

Regarding Harry's problem of the clock, which conflicts with the popular notion of this old-time puzzle, it may be seen that if the minute hand goes twelve times faster than the hour hand that they will meet eleven times during every twelve hours, so by taking the eleventh part of the twelve hours for our constant we find that there will be a meeting of the hands every 65 minutes 27 and 3/11 seconds; therefore the hands will be together at 12 o'clock and at 1:5:27 3/11, 2:10:54 6/11, 3:16:21 9/11, 4:21:49 1/11, 5:27:16 4/11, 6:32:43 7/11, 7:38:10 10/11, 8:43:38 2/11, 9:49:5 5/11 and 10:54:32 8/11.

The Square-Deal Puzzle.

Out of an unusually large number of competitors to this curious bit of carpentering I find that many succeeded in doing the feat in five pieces; some did it in four pieces, but few discovered the correct answer in three. The accompanying illustration conveys a pretty lesson in square root by showing that three squares containing 1 and 16 and 64 inches, when combined, should form a square of 81 inches with 9 on each side as shown:



The Oriental love story tells of a broken pipe!

Answer to the Moon Problem.

By taking the best possible advantage of the crescent form of the moon, our clever puzzlists have succeeded in producing fifteen pieces of cream cheese for the hungry