ANSWER TO THE ROGUE'S LETTER

In that study of hidden cities we find the following familiar places in their regular order: Cleveland, Baltimore, Raleigh, Dallas, Omaha, Macon, Utica, Winona, Norwalk, Andover, Dover, Derby, York, Thebes, Reading, Rome, Early, Dayton, Lowell and Ellsworth.

Charade: Metaphysician.

SOLUTION TO CONVENTION PUZZLE

There were 147 votes cast. On the first count the affirmative vote was found to be to the negative vote as 4 to 3, but when eleven votes were transferred from the affirmative to the negative, the negative had a majority of one. This shows that 21 was one-seventh of the whole number of votes.

WHAT HAPPENED

In this rollicsome picture of the elephant and the mischievous boy it was required to cut the picture into two pieces which would fit together so as to show what happened when the chain broke. The following illustration describes the scene very aptly:

The monkey went from 10, 11, 12, 8, 4, 3, 7, 6, 2, 1, 5 and 9, as that route travels the wide spaces but twice.

The rebus arithmetic reads: Cow +heel+women, less wheel, less cow, which would leave O.

In the story of the great parade it was told that when the men attempted to march with any number of men —from two to ten—in a row, there was always a vacant space left where Casey used to walk. Now all of our young puzzlists know how to find the least common multiple of 2, 3, 4, 5, 6, 7, 8, 9 and 10, but that vacancy of one puzzles them, because it took them away from the rules of their books. Nevertheless, it is plain arithmetic and yields readily to a little reasoning, 2520 is the least common multiple of 2, 3, 4, 5, 6, 7, 8, 9 and 10, and may be divided by any of those numbers, hence that must have been the original number of members, when Casey was alive. Take away the one man and attempt to arrange the parade with any number of men from 2 to 10 abreast, and it is plain to be seen that the last row will always be short just one man, so it is obvious that the correct answer would be 2,519 men if it were not for that puzzle catch which said: "As eleven would not do." For 2,519 men could be divided by 11, so we will have to give 5039 as the correct number of men who could not be divided into rows from 2 to 11.

The Monad puzzle is cut into four pieces by the curved line as shown, whereas a straight cut from A to B would give 4 pieces of same size but different shapes. The horse shoes may be divided into four pieces which will fit together so as to make a perfect monad.

Charade: Mama or papa.

SOLUTION TO LAUNDRY PUZZLE

It can be seen that if there were thirty pieces of laundry and Freddie was charged 27 cents for half the cuffs and one-third of the collars, there must have been 12 cuffs and 18 collars, so Charlie will owe 39 cents, as collars cost 2 cents and cuffs 2½ cents.

The Smart Alec puzzle, as was intimated, proved to be a difficult task to master by purely experimental methods, although, as was explained, a knowledge of Pythagoras' problem is of use in discovering the answer.

Pythagoras' rule will give us at least the size of the square to be formed, for if we divide the paper into four pieces by cutting in the dotted lines, we know that 2 and 4 will make one square, while 1 and 3 will form a smaller one. Placing the two squares together, according to the manner explained some time ago, the hypothenuse line from the corner X to the top of the smaller square at Y gives the size of the new square.

To solve the puzzle, however, in the fewest possible number of pieces, first clip off the little pieces 1 and 2 and pack them into the center. Then cut the zig-zag steps, and move the piece No. 4 down one step and the four pieces fit together so as to make a perfect square. There are numerous ways of performing the feat with from five to a dozen pieces, but the answer as given is both difficult and scientific.
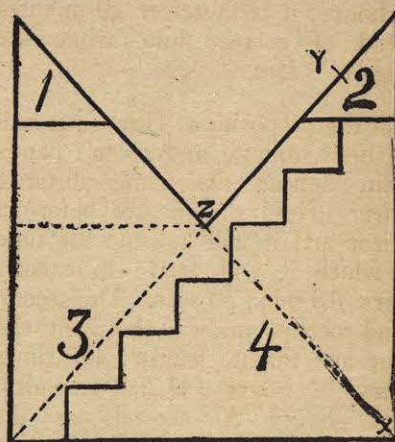
The Quarrelsome Neighbors made their paths as shown in the accompanying sketch:
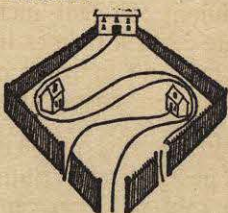
What did the bear want? Why, as he was in a dry goods store, he wanted muslin!

The players who all won were fiddlers in the German band and gained $5 per night. I did not intimate they were card players.

ANSWERS TO LABELS AND TRADE-MARKS

All of the pictorial rebusses contained in that odd collection of labels from the corner grocery were mastered by our clever puzzlists, although some of them proved to be

pretty hard nuts to crack. The following are the words given in their regular order: Cab-ages, Beets, Berries, Tar, Borax, Time and Sage, Tom eight o's, Black king, Pears, Rays Inn's, Turn ups, Coal and wood, Teas and Condensed Milk, Dates, Butter, Candies, Candles, Canned Peas, Pickles, Mat chess, Cat sup, Flour, Molasses, Indian and Rhyme eels, Farina, and Carpet tacks.

THE REBUS PUZZLE

In the sketch of the two parrots which are supposed to represent the motto of a tea store a clever reading of the situation will discover that "ON ST is the best poll I see," or, as the merchant would say, "Honest tea is the best policy."

In the first of the Time Puzzles the watches must have started at 45 minutes and 25 seconds past midnight, and as the fastest gets three minutes ahead of the other every hour, it would be one hour ahead in 20 hours; it is therefore 20 minutes ahead of correct time, while the other is 8.45m. 25 sec.

In the proposition: How soon will the hour, minute and second hands again appear the same distance apart? Hold the picture before a mirror and it will indicate the time at which it will arrive in exactly 6 hrs., 10 min., 50 secs. The second hand occurs midway between the hour and minute hands 1,427 times every 12 hours (43,200 seconds), viz.: Every 30 seconds as the constant, which gives the position on the dial as the nearest possible tri-section.

A pendulum 52.02981 inches long will vibrate 52.02981 times in a minute. If you can't figure it out, take my word for its correctness.

The Butcher Boy problem is authentic in every detail. Butcher Boy cost $220, sold at 12 per cent. loss= $198. The other horse cost $264, sold at 10 per cent. profit=$295.68. Total, $484; received $493.68, which shows 2 per cent. profit on the whole.

The mystery of the Gold Brick is mathematically explained by saying that the new form is really 25×25 1-23, which still contains 576 square inches.

The Hindoo puzzle forms the cross as follows:

It is apparent from the struggles that the infant "cannot go a step farther."

The Bottled letter shows that Noah must have been the writer.

The cheese is divided in two pieces by one cut, into 4 by the second; 8 by the third; 15 by the fourth; 26 by the fifth, and 42 by the sixth.

The Japanese Mines may be crossed by two straight lines as shown:
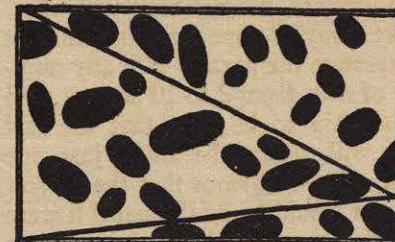
In the Puzzleland Patchquilt we find the names of Hannah, Etta, Tesse, Amos, Moses, James, Josh, Sam, Mose, Otto, Frank, Hanks, Harry, Thomas, Hope, Joseph, Jesse, Seth, Hart, Henry, Mat, Nate, Nathon, Aesop, Earnest, Anna, Ann, Anne, Emma and Jose.

The Cipher despatch says: Let us suppose that Charles is one-third richer than Ellen, then how much poorer is Ellen than Charles? The answer to which is that Ellen is one-fourth poorer than Charles.

SOLUTION TO WEARY WILLIE AND TIRED TIM PUZZLE

The information gleaned from Weary Willie's diary proves that the distance between Joytown and Pleasantville is 18 miles.

The answer to this problem may be obtained by simple addition, subtraction, and a little common sense, as follows:

When they met for the first time, Weary Willie had gone ten miles from Joytown, while their combined journeys equaled the distance between the two towns.

Meeting for the second time, their combined journeys equaled three times the distance between the towns.

Weary Willie, who had gone ten miles at their first meeting, by the same ratio must have traveled 30 miles when they met for the second

time.

Weary Willie walked ten miles from Joytown and met Tim; then he went the distance from that signpost to Pleasantville.

Back he came 12 miles from Pleasantville to the signpost in the second picture.

We have proved that he went altogether 30 miles. Also that he went 10 miles, 12 miles and the distance from the signpost in the first picture to Pleasantville.

That unknown stretch we may now ascertain by deducting 22 miles from 30 miles, giving 8 miles as the distance Willie had to go to complete his trip to Pleasantville, after he had gone 10 miles.

Therefore, the distance between the towns must be 18 miles.

The question of which is Willie and which is Tim cannot be answered from the picture, but we may christen them as we like without affecting the puzzle.

The Pictorial Charade reads: "Horses to let or for sale."

Pat's pig sty puzzled many clever mathematicians as well as puzzlists who failed to place twenty-one pigs in four pens so that there will be an odd number of pigs within each pen, as well as an even number of pairs. Clever puzzlists hit upon the necessary expedient of "nesting" the pens one inside of another, but the feature of saying that each pen must contain "an equal number of pairs," as well as the fact of the outside pen, which is in sight, holding not less than five pigs which can be seen, spoiled some of the answers suggested.
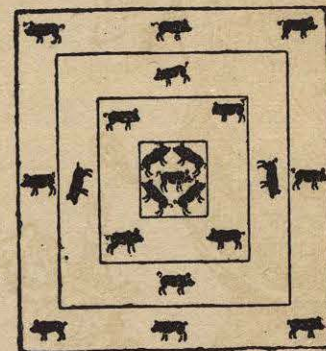

The only possible answer is to place five pigs in the center pen, viz.: two pairs and an odd pig. Then build a pen round that and place four pigs in it, a third pen surrounds that one, also with four pigs, and the fifth pen with eight pigs incloses the other pens, and as a matter of fact contains the entire twenty-one pigs!
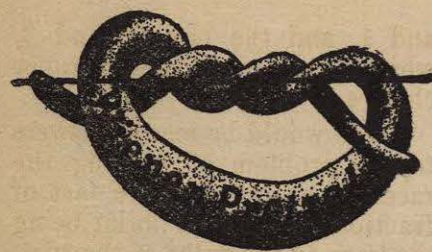
The Pretzel can be divided into ten pieces as shown:

Duck shooting at Buzzard's Bay is solved by changing the position of two ducks, as shown, which gives five rows of four-in-line and places one duck in Grover's game bag:
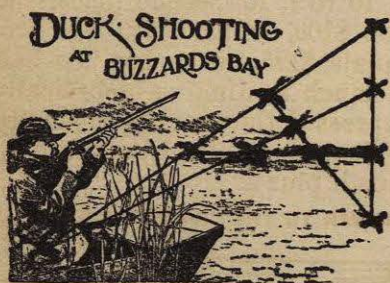
ANSWER TO PATCH QUILT PUZZLE

The following diagram shows how the 13×13 quilt can be divided into eleven smaller squares, which is the least number of square pieces which it will divide into without destroying the checkered pattern. It proved to be a difficult puzzle, and those who discovered the correct answer, found that there was a certain mathematical principle involved, which held them close to the rules of square root.
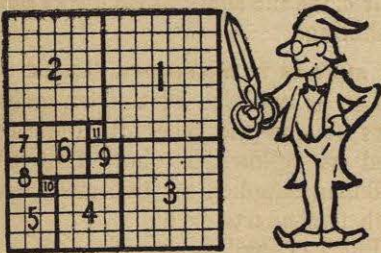
ANSWER TO THE APPLE WOMEN'S MISSING PENNIES

To tackle the problem from a somewhat new standpoint it can readily be shown that the apples, if sold at 1-3 of a penny and 24-60 of a penny, would average 5-6 for two, or 25-60 of a penny for each apple, but as they were closed out at the rate of five apples for two pence, which is the same as 2-5 or 24-60 of a penny per apple, then 1-60 of a penny was lost on every apple. As it was stated that seven pence was lost, we will multiply that 60 by 7, which shows there must have been 420 apples, of which they each had

one-half. As Mrs. Jones had 210, for which she would have received 105 pence, but only got one-half of the proceeds of the entire sale at the rate of 5 for 2 pence, viz.: 84 pence, she lost twenty-one pence, while Mrs. Smith, who should have received but seventy pence for her three-for-a-penny fruit, actually gets eighty-five.

The mysterious discrepancy occurs at the end of the seventieth combination sale. Mrs. Smith's cheap fruit becomes exhausted on the seventieth sale, which takes 210 of three-fors, and 140 of the two-fors, and at that stage of the game Mrs. Smith was entitled to half of the proceeds, and should have withdrawn with her seventy pence. As there were now just seventy of the better class stock left, every sale now involves the giving of three apples for a penny, which should sell for two for a penny, Mrs. Jones' stock is sacrificed.

ANSWER TO A, B, C, PUZZLE

Our sharp young puzzlists correctly surmised that the half dozen letters which did not come to supper were U, V, W, X, Y and Z, because they come after T.

Into the second proposition, change the M into Y and you spell the word cayenne. The second block represents the island "Cuba A."

ANSWER TO THE SWARM OF BEES

The eight good resolutions which tht clever young miss drafted for the new year will be found to consist of always being "be backward in nothing, be wise, be independent, be benign, be on time, be honest, and be behindhand in nothing."

AFTER DINNER TRICK

That odd little sleight-of-hand performance with the four empty and four full glasses can readily be remembered by the following rule: First, why one long move, then two short ones and then one long one, viz.: First move 2 and 3 to the extreme end; then fill the gap with 5 and 6. Fill gap with 8 and 2; then finish with 1 and 5. Counting the original numbers of the glasses.

Decapitation puzzle: Shark.
Animals enigmatically expressed: Beaver, Camelion, Glutton, Pole cat, Marten, Goat, Antelope.

REMARKABLE KLONDIKE YARNS

Everybody, including their cousins, uncles and aunts, caught on to the spirit of one or more of those Klondike yarns, and gave reasons

for selecting one of the most remarkable of the three. As was surmised, however, while many discovered one of the catches, very few hit upon two, so, according to the theory of chances, the probability of any one person catching on to all three of the points was so remote that there were only a few left to the final sifting.

The winners all selected the first story as being remarkably beyond all belief. Just imagine that three-year-old infant eating forty-eight pigs' feet in the cause of science! He had already devoured "four pigs' feet" (not "four pig's feet"), and then tackled twice as many more (32 more) just to satisfy his mind regarding the truth or fallacy of the existence of a "bogie man."

There was really nothing in the other stories which gives evidence of extraordinary intelligence or which should excite our surprise. A stupid child which had been told that there were exactly two pints to a quart said that the water which ran over the Falls of Niagara in a month was also exactly two pints to a quart. Nothing, of course, could be more natural that that a deaf and dumb babe should say absolutely nothing, so the first yarn was the only remarkable "whopper" which would bring a blush to the cheek of Baron Munchausen.

ANSWER TO SANTA CLAUS PUZZLE

In that capacious pack in which were stored so many toys which were supposed to represent the the parts of a chopped-up person, we begin at the top with a watch and discover hands and face, teeth, caps, hair, calves, locks, arms, palms, limbs, two lips, two feet, chest, nails, side, drum, cords, veins, pupils, heart, bridge, soles, temple, column, ears, corns, tongue, body, skull, blade, lash, lights, gums and windpipe.

Lewis Carrol's monkey puzzle is about as paradoxical as a recent conundrum which is going the rounds, as to what is it that will go down a chimney down, but will not go up a chimney up? (Umbrella.) There are three possible consequences to select from in the monkey problem: The progress of climbing might have no effect whatever upon the equilibrium; it might cause the weight to fall, which would raise the monkey quicker than he wished, or it might

raise the weight, which would be apt to give the monkey a tumble. From the standpoint of a guess, pure and simple, opinions were about evenly divided, so two out of three were wrong in their conclusions.

From a theoretical and scientific point of view it is just as paradoxical as the ambrella conundrum, for if the monkey goes up he will go down, whereas if he goes down he will go up. The argument is based on Newton's law that "action is equal to reaction." The engine which moves a train is pulling itself along by the rails. Theoretically speaking, if there was no friction, a fly could not crawl up that rope without destroying the equilibrium, so that the rope would be drawn over the pully and the monkey end fall by a rapidly increasing momentum.

ANSWER TO THE EASTER PUZZLE

The following illustration shows the manner of dividing the Greek cross into three pieces which can be fitted together so as to form a rectangle twice as long as it is wide. The reversing of the proposition to the dividing of an oblong into a Greek cross would be more difficult, as no inkling of the angles to be fitted together is given.
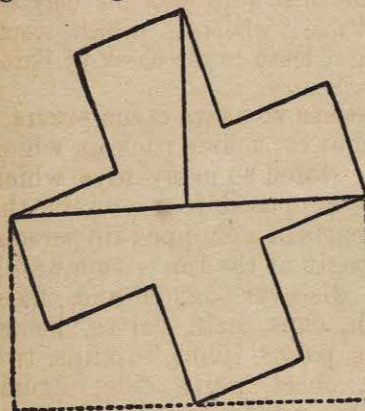
The Swastica puzzle may be cut and squared as follows:
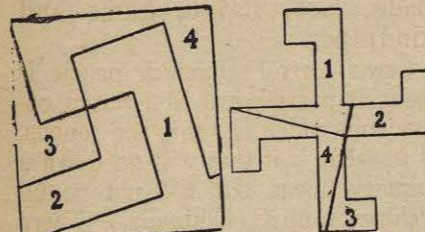
THE CONCEALED LOCATION OF THE BOLD RIDER IS DALLAS

Anagram puzzle: Punishment.
Numerical enigma: Much ado about nothing.

Evolution Puzzles. Lands, hands, hinds, hints, hilts, hills.
Beer, bees, Ben's, bins, wins, wine. Shoe, shot, soot, boot, North, forth, forts, torts, toots, tooth, sooth, south.

In the puzzle of the pasture field it becomes necessary to figure upon the daily growth of grass. We were told that the cow eats as much as the goat and the goose. Therefore, if the cow and goat eat the stock of standing grass added to 45 days' growth in 45 days, it is plain that 2 goats and a goose would take the same time. As a goat and goose would be twice as long, we see that one goat would take 90 days, and that the goose could just keep up with the growing grass. Therefore, if the cow eats 1-60 of the stock per day, and the goat 1-90, together they would eat 1-36. The answer is that the cow and goat would eat up the standing crop in 36 days, while the goose devotes the same time to taking care of the daily growth.

In giving the answers to the necklace puzzle it may be said that any jeweler, as well as ninety-nine out of a hundred mathematicians, would say that to solve the necklace puzzle would be to open the smaller links at the ends of the twelve pieces, which, it may readily be seen, would reduce the cost to $1.80. The correct answer, however, is arrived at by opening the ten links on those two small five-link pieces, on the right and left sides, which have three small and two large links each. To open and mend those ten links so as to bring the chain into an endless necklace would cost just $1.70, which is the cheapest possible answer.

Rebus: Fund.
Mrs. Johnsing's laconic reply was: "Eight."

Hipity-Hop could go one mile up the hill in 40 minutes, and could come down a mile in 13⅓ minutes. Therefore he would average a mile up and down in 53⅓ minutes. Since the particular hill which he tells about required six hours to climb and descend, we may determine its height by dividing six hours by 53⅓ minutes. Thus we learn that hill must have been six and three-quarter miles high.

Charade: Mated.

The florist had a 50-cent piece and a 25-cent piece. They pooled all their money, then the florist takes the $1. the 5 and two 2-cent pieces; the lady the 50, 10, 10

and 1, and the boy 25 and 8, which gives each their proper change.

There would be many answers to the problem of playing the races were it not for the fact of fractional parts of a dollar being contrary to the rules of the turfites, so the only amounts which satisfy the conditions of the problem are that each lad had $2 Jim bet 15 at 15 to 1 straight, and won $225, which with his original $25 equals $250. Jack bet $10 at 10 to 1, for second place, and won $100, which with his $25, equals $125; so he has just half as much as Jim. Algebraically expressed the problem is simply 2 [a sq. plus e plus b] equals b sq. plus b plus a.

ANSWER TO THE CARPENTER'S PUZZLE
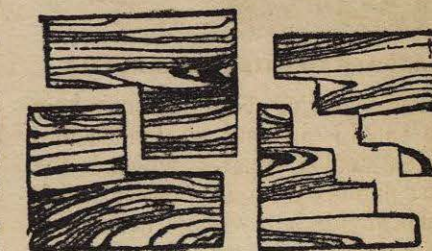
The amount to be distributed each week was 120 shillings. This divided among twenty persons gave 6 shillings to each. If there had been only fifteen persons they would have got 8 shillings apiece, but when twenty-four came the share of each was only 5 shillings.

ANSWER TO MILKMAN'S PUZZLE

Let us call one of the ten-gallon cans A and the other B, and proceed as follows to show how the milkman supplied his two customers with two quarts each:

Fill 5 qt. pail from can A.
Pour 5 qt. pail into 4 qt. pail.
Empty 4 qt. pail into can A.
Pour 5 qt. pail into 4 qt. pail.
Fill 5 qt. pail from can A.
Fill 4 qt. pail from 5 qt. pail.
Empty 4 qt. pail into can A.
Fill 4 qt. pail from can B.
Pour 4 qt. pail into can A.

which fills can A, leaving 2 quarts in 4 qt. pail. Thus the milkman has supplied each of his customers with exactly two quarts of milk, and solved his perplexing problem.

Charade: Potatoes.

In the matter of dividing the O'Shaugnessy estate, it being clear that it was designed to give the
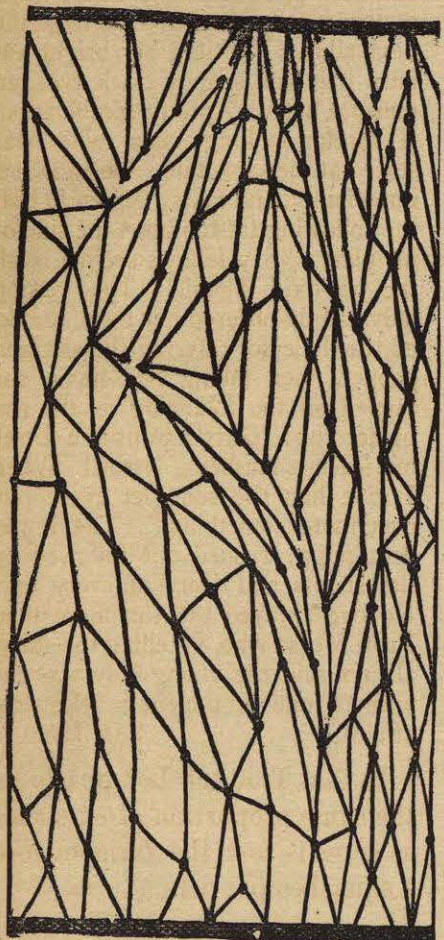
mother twice as much as the daughter, and the son twice as much as the mother, it becomes a simple matter to carry out the terms of the bequest by giving the daughter one-seventh, the mother two-sevenths and the son four-sevenths.

That vinegar merchant sold the 13 and 15 gal. kegs of oil at 50 cents per gal.=$14. He also sold 8, 17 and 31 gals. of vinegar at 25 cents =$14. So he had the 19 gal. barrel left, which was worth $4.75, or $9.50, according to whether it contained vinegar or oil.

Charade: Ciphers.

Mary's age problem shows that she was once three times as old as Ann, so let us try 12 to 4, which shows a difference of 11 years, so, if their combined ages amount to 44, Ann is 16 yrs. 6 mos. to Mary's 27 yrs. 6 mos. Mary being twice as old as Ann was (13.9) when Mary was (24.9) half as old as Ann will be when she is (49.6) three times as old as Mary was when Mary was three times as old as Ann!

When Miss Carrie Wait had her falling out she must have weighed 120 lbs. as the following 12 cords of the hammock broke as shown in the accompanying illustration

Observe that one of the circles is purposely out of alignment.

The illustrated proverb says: "In haste accuse no man."

Mandy's joke on Mr. Johnsing was "Pork-you-pine."

The pals at Sing Sing go by their numbers and not by their names, so if you gave "Forty" seven cents for the apples and sold them for seventy

which shows the twelve breaks, beginning at the upper left hand corner.

Clancey's route is shown on the following diagram:
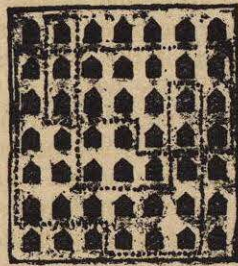
A Charade: Shaddock.
A Rebus: Pat.

Miss Bo-Peep must have had at least eight sheep in her flock. Eight posts arranged in a square would contain the same area as ten posts of an oblong—of course, assuming that the posts were in both cases set a uniform distance apart. For instance, if the posts he set one foot apart, an oblong with five posts on one side and two on the other would enclose four square feet and require ten posts. Whereas eight posts set one foot apart and arranged in a square will likewise enclose four square feet.
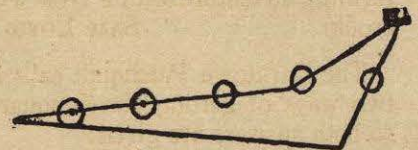
A Rebus: Myriad.

The clock dial was struck by the bullet at 10 o'clock, 21 minutes and 1-11 seconds as proven by the position of the second hand.

A half turn of Rip Van Winkle's picture shows that the features represent a little dog curled up:

The Admiral shows how he sank the five battleships in four rushes:

John Underwood's letter must have come from the Keystone state and was dated "fried A."

The Pictoral Algebra reads Pins +hoes+cart—shoes—car=pint.

The Kangaroo puzzle can be solved by any 12-letter word in more or less moves. The object, therefore, was to find a word which would best suit the play. The title of the puzzle; the reference to a bay in Australia and other hints were given as aids to the word "Wooloomooloo," which solves the problem in twenty moves.

you would make 900 per cent.

The Rebus Puzzle advises you to "be independent, but not too independent."

Jennie is evidently offering hay to that cow, outlined in the picture.

In the Frankfurter problem all that Harry had to do was to remember that if Jim paid 11 cents the others were supposed to have paid the same, which would make the 11 frankfurters worth 33 cents. Harry had bought 4 for 12 cents, so he should have 1 cent. Tommy had bought 7 for 21 cents, so he wants 10 cents of the money, and then each boy will have chipped in 11 cents. Concerning the equitable division of the sausages, it may be said that each boy was entitled to eat three and two-thirds of a sausage for his portion."
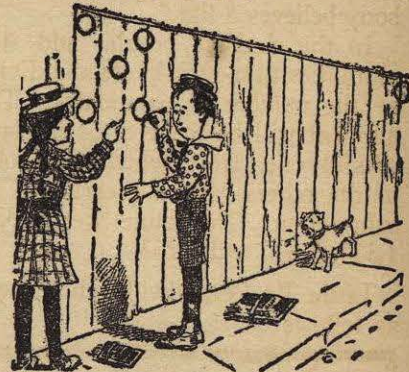
There were 17 Camels in the herd.

According to Biddy's verse her age is as much more than two as twice her age is than twenty. This makes her eighteen forty years ago and fifty-eight now.

SOLUTION OF BARGAIN COUNTER PUZZLE

Smith must have started out with $99.98, and spent all but $49.99. Now he has as many pennies as he before had dollars and half as many dollars as he previously had pennies.

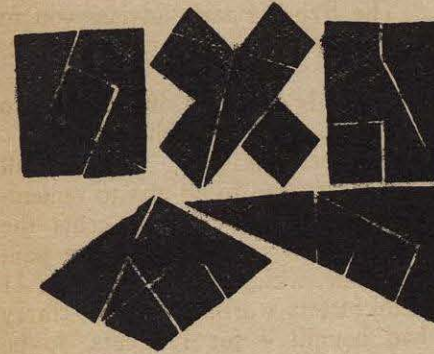Jennie's trick was to move that one ring from the left to the extreme right as shown.

The following are the five geometrical forms:

In Isaacstein's remarkable cut in prices, as the dealer has reduced the price 3-5 each mark down, the next should be 52 cents 2 mills.

SOLUTION TO REAL ESTATE

There were eighteen lots, bought at $13.50 a lot, and sold at $18, making a profit of $81, which is the cost price of six lots.
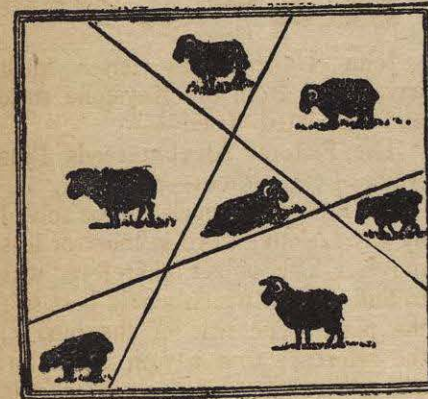
The following routes show the answer to Puzzleland Park:
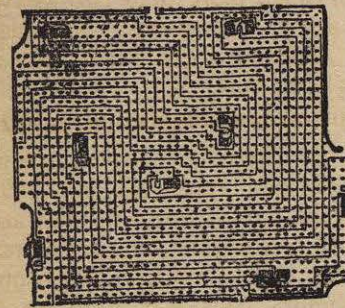
Sammy's Rebus in the story of the hunter and the squirrel say: "Nobody believes a liar."

In the election puzzle add the pluralities to the total vote and divide by the number of candidates. The quotient will be the vote of the successful one, from which the votes of the others can be ascertained by subtraction. The counts were 1,336, 1,314, 1,306 and 1,263.

Little Bo-Peep divided her sheep as follows:

In the evolution puzzles we find the changes: Eat, cat, dot, dog. Boy, bay, may, man. Wood, wool,

In that puzzle of the greatest catch of the season the real catch turns upon the statement that "the scales weigh nine pounds." Carefully note that it does not give the weight of the scales as nine pounds, but informs us that the scales will weigh anything up to nine pounds! Everything now becomes plain sailing as the weight of the fisherman is 125 pounds. So the weight of the fishes must be 2½ pounds, plus their scales ½ a pound, plus 9½ pounds as the weight of the scales. Total 12½ pounds, which equals one-tenth of the weight of the fisherman.

In that compound puzzle we know that he is not a young man as he is over forty. He is a scholar as he is intent on his letters: He is smart because he is bound to excell.
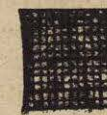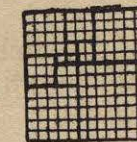
The Deaf and Dumb Story reads as follows:

The other day I noticed an excited woman who no one understood, creating a commotion on an elevated train. After vainly essaying French and German, it dawned on me that she was deaf and dumb. She quickly told with her fingers that her purse was stolen as she bought her ticket. Observing a ticket in her other hand, and thinking she had deposited her purse in the ticket box, I suggested getting off at the next stop to telephone back to the station master. He found the purse and sent it by next train.

The owner could not imagine how I recovered the purse, but I know from the look she gave me that she took me for a pick-pocket.

I hope the good lady may continue to live many, many days to tell of her thrilling adventure with a New York crook.   SAM LOYD.

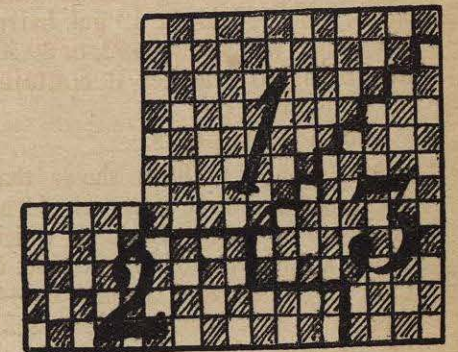The Darktown Patchquilt calls for two ways of getting eleven squares, so both answers are given:

cool, coal. Lion, limn, limb, lamb. Warm, ward, word, cord, cold. Fish, fist, fiat, feat, meat. More, lore, lose, loss, less. Fire, fore, ford, cord, cold. Ride, wide, wade, wale, walk.

The hidden city is Macon.

Mrs. Pythagoras shows the proper way of squaring her matting so as to preserve the pattern:

Here is what the telegram says:

Prof. Morse once took me to lunch at a new place on Dey street. I commented on the number of young people present, espcially bright and pretty girls who appeared to be acquainted. He smiled knowingly at my remarks, but said nothing. We had been there but a short time when a young lady entered and took the next table. I noticed her bright auburn hair and snappy black eyes, an unusual but very pretty combination. A foreign-looking chap who was seated at the same table, stared rather impudently, and taking his knife beat the following tat-too upon the side of his plate: "Say fellows see me mash the per-oxid blond." The young lady calmly ordered her meal, thanked the dude for offering the salt and pepper, then taking her spoon she tapped off the following on the rim of her cup: "Girls I want you to see me teach a masher a lesson! When I give him the soup let every one contribute something." The impudent puppy rushed out followed by the shouts and jeers of every one. No one enjoyed the fun more than Prof. Morse who, in telling the story, always said the young lady was the wife of one prominent in electrical affairs.   SAM LOYD.

In that Trading Lot puzzle as the same proportion of squashes as acres is lost the farmers lose 4 squashes per acre.

Answer to the Fire-Escape Puzzle.

Despite its bland and child-like simplicity, as Bret Harte would say, there proved to be many curious little points about the Binks fire escape problem which escaped the attention of some of our keen-eyed puzzlists. It was told that the combined weight of the family and dog amounts to 390 pounds, and that it was only safe to lower thirty pounds at a time, although more could be lowered if the other end was properly counterbalanced.

Many answers were received, giving the greater weight to the husband, which the picture plainly refutes, or other plans which lower the dog or baby and then endow them with phenomenal and precocious intelligence which enable them to climb in and out of the buckets without assistance, all of which, as shown by the following correct answer, is not necessary.

We will first apportion the weight as follows:

Mrs. Watchman, 210 pounds; Mr. Watchman, 90 pounds; dog, 60 pounds; baby, 30 pounds, which we proceed to lower as follows:

First—Lower baby, 30 pounds.
Second—Lower dog, 60 pounds, and bring up baby, 30 pounds.
Third—Lower Mr. Watchman, 90 pounds, and bring up dog, 60 pounds.
Fourth—Lower baby, 30 pounds.
Fifth—Lower dog, 60 pounds, and bring up baby, 30 pounds.
Sixth—Lower baby, 30 pounds.
Seventh—Lower Mrs. Watchman, 210 pounds, and bring up all the others.
Eighth—Lower baby, 30 pounds.
Ninth—Lower dog, 60 pounds, and bring up baby, 30 pounds.
Tenth—Lower baby, 30 pounds.
Eleventh—Lower Mr. Watchman, 90 pounds, bring up dog, 60 pounds.
Twelfth—Lower dog, 60 pounds, and bring up baby, 30 pounds.
Thirteenth—Lower baby, 30 pounds, and they have all reached the ground floor.

In giving the answer to the big watch puzzle, which was to tell the time of day always represented upon the signs in front of jewelry stores, I wish to correct a curious misapprehension which seems to have taken hold of the public mind. I was not surprised to find that almost every correspondent who vouchsafed an opinion on the subject stated that it was a well known fact that the time given upon the clocks was intended to represent the hour when President Lincoln was assassinated. This rumor originated from the fact that many public clocks were stopped at 7:22 a. m., to represent the moment when Lincoln died, but the official records show that he was shot at exactly 10:30 the night before. There is no connection, therefore, between the death of Lincoln and the time upon the sign clocks, which, as a matter of fact, was adopted several hundred years ago, for the sake of symmetry, and to give a convenient space for displaying the jeweler's name upon the dial. The exact time, as indicated upon those sign clocks, with the hands at equal distances from the figure 6, can only be 18 and 6/13th minutes past 8, or as it may also be expressed: 8 o'clock, 18 minutes, 27 and 9/13th seconds. It constitutes a puzzling little problem which many good mathematicians failed to master.

The crescent can be divided into six pieces as shown, when by turning over one piece they will form the cross.

ANSWER TO CROSS & CRESCENT PUZZLE.
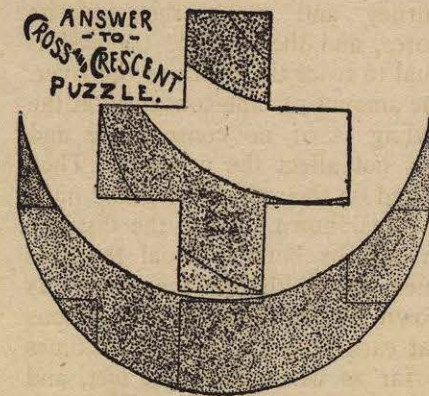
Puzzle of the Honest Milkman.

That honest milkman had five gallons of milk in can No. 2 and eleven gallons of pure water in can No. 1. Therefore, from can No. 1 pour five gallons of water into No. 2. Then pour six of that mixture back into No. 1, and then pour from No. 1 into No. 2 and there are eight gallons in each can, although in No. 2 there are three gallons of milk, and in No. 1 but two.

By selling from can No. 1 at 10 cents a quart he really gets 40 cents a quart for all the milk it contains, while for the other, which he sells at 5 cents a quart, he gets but 13 1/3 cents a quart, so he really gets three times as much for the milk from can No. 1 as for that from No. 2, which, therefore, is the correct answer to the puzzle.

Now, regarding that bit of Spanish legendry, the puzzle being to show how the eight rooms were occupied, so that there should be eleven persons on each side of the house, with twice as many on the top floor, it can be shown as follows:

Top Floor.			Second Floor.		
1	5	1		2	1
5		5	2		2
1	5	1		2	1

After the nine were carried off, the rest were arranged as follows:

Top Floor.			Second Floor.		
3	2	3	1	1	1
1		1	1		1
4	1	3	1	1	1

which shows eleven on all four sides in both instances.

The office boy's puzzle being interpreted says: "Trustee's room."

The Centennial Puzzle has sometimes been solved as shown in the first of these additions, but is plainly wrong as it gives two additions:

70		24 3/6		95 3/7
13		75 9/18		4 16/28
6				
5		100		100
4				
98		98 3/6		94½
2		1 27/54		5 38/76
100		100		100
		1 6/7		57 3/6
		3		
		95 4/28		42 9/18
		100		100

Six answers are shown using fractions.

In that Poetical Perplexity, the lines were written in the following order: Gray, Shakespear, Byron, Pope, Pope, Goldsmith, Pope, Goldsmith, Beattie, Milton, Young, Shakespear, Pope, Shakespear, Shakespear, Milton, Pope, Goldsmith, Gray, Shakespear.

Regarding that little puzzle in multiplication and addition, wherein it was required to show that other numbers besides 2 and 2 would produce the same results when added or multiplied together, I find that despite its extreme simplicity ninety-nine out of every hundred persons have always been led to agree with the editor of "Notes and Queries" in believing that $2 \times 2 = 4$ and $2 + 2 = 4$ was an arithmetical feat in numbers which could not be duplicated with or without the use of fractions.

There are billions of simple answers obtained from the formula $x + \frac{x}{x-1}$ by giving any required value to x, as $3 + 1½ = 4$, or $3 \times 1½ = 4$.

In that matter of domestic complications, Mrs. Jones was the daughter of Smith and the niece of Brown, so there were but four persons. $100 was contributed, $92 spent and each received $2 in the distribution.

## Answer to the Fighting Fish Puzzle.

There would certainly have been a battle royal in the Siamese aquarium had there been as many fishes in that fight as I have received answers to the problem, and they all maintained such different views. There are answers galore worked out in trigonometry and algebra, showing how one side or the other should win out in from one to twelve minutes.

For clearness and simplicity as agreeing with the actual record of the last fight I am inclined to accept the following decision of the timekeeper as being correct:

Three of the little fish were paired off with each of three of the big fish and engaged their attention while the other four little fighters polished off the fourth big one in just three minutes. Then five little fellows tackled one big fish and killed him in two minutes and twenty seconds, while the other little ones were battling with the other big ones. It is evident that if the remaining two groups had been assisted by one more fighter they would have finished in the same time, so there is only sufficient resistance left in both of the big ones to call for the attention of a little fish for two minutes and twenty-four seconds. Therefore if seven now attack instead of one, they would do it in one-seventh of that time, or twenty and four-sevenths of a second. In dividing the little fish forces against the remaining two big ones—one would be attacked by seven and the other by six—the last fish therefore at the end of the twenty and four-sevenths seconds would meet the punishment which one little one could administer in that time. The whole thirteen little fellows concentrating their attack, would give the fish his quietus in one-thirteenth of that time, or one and fifty-three ninety-first seconds.

Adding up the totals of the time given in the several rounds—3 minutes, 2 minutes and 24 seconds, 20 4/7 seconds and 53/91 seconds, we have 5 minutes 46 2/13 seconds as the entire time consumed in the battle.

Regarding that ferryboat puzzle, I promised to show how the problem can be solved by common sense and simple addition, which I will proceed to do by reference to the following diagram:
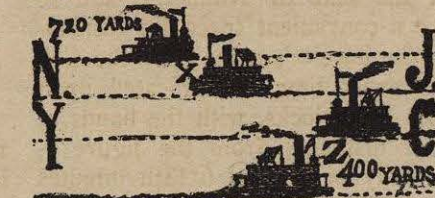
It was told that the two ferryboats started simultaneously from the sides of the river and met at the point X, just 720 yards from the New York shore. A glance at the sketch clearly shows that the combined distance which both have traveled is equal to the width of the river and that the black boat has gone 720 yards. Well, they continue their journey and reach the opposite shores, and the distance traveled is equal to twice the width of the river. The amount of time consumed at the landing is of no consequence and does not affect the problem. They started on their return trip and meet at Z, as shown. Now, the distance traveled by both is equal to three times the width of the river, as shown by the lines, so it is obvious that each boat has gone three times as far as when they first met, and had made but one width. The black boat had then gone 720 yards, so it has now gone three times that distance, viz., 2,160 yards, to Z. This sketch shows to be 400 yards more than the width of the river, so all the mathematical work we are obliged to do is to deduct 400 from 2,160 to find that the river from New York to Jersey City is 1,760 yards wide, which is exactly one mile. Without the aid of algebra, geometry or mathematics, we have solved by elementary kindergarten arithmetic a problem which would baffle half the mathematicians in the city.

In the Potato Race puzzle, it does not take much time to prove that 101,000 feet, or a little more than 19 miles, must be traveled to gather 100 potatoes placed ten feet apart. Despite of the fact that it looks as if Tom, who was 2.04 per cent. quicker and should win in ninety-nine cases out of a hundred, yet Harry will win by the slightest possible margin if he takes the odds of the ninety-ninth potato. Tom being the quicker, will get the first potato, Harry the second, and so on to the last, but Tom never gets the chance to capture two adjacent potatoes.

Harry will have to go 49,980 feet to bring in his 49 potatoes, and as Tom can go 2.04 per cent. quicker, he could go just 50,999 and a half feet during the same time, but as he would have to go 51,000 feet to bring in his 50 potatoes, Harry will win by less than half a foot!

The lady who was "deeply injured" had removed a tight shoe!

In that moving day puzzle: First move the whisky flask 1, scrubbing brush 2, flatiron 3, whisky flask 4, pepper-box 5, mouse trap 6, whisky flask 7, flatiron 8, scrubbing brush 9, pepper-box 10, flatiron 11, whisky bottle 12, mouse trap 13, flatiron 14, pepper-box 15, scrubbing brush 16, whisky bottle—and the feat is accomplished.

In the Plumber's problem it will be found that a rectangular tank twice as wide as it is deep gives the most economical form. If a cube 12.6 feet square holds 2,000 cubic feet, then half that depth would give the required 1,000 feet.

Fig B.
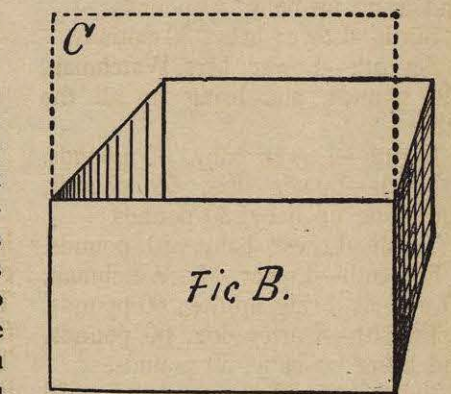
Our surveying class find that Crow Farm contained 58 acres.

To tell Mother's age experimentally, I would say that for every year of Tommy's age his father must have six, viz.: If Tommy is 1 his father would be 6 so by adding four years to each Tommy will be 5 and his father twice as much. So whatever age Tommy may be, as shown in the picture, he will be five times as old at the second stage, when their combined ages amount to 140. At first Tommy's age plus six times