CURIOUS TRICKS WITH NUMBERS

By Frederic B. Emery

...ERE are quite a num... ...er of easy methods of ...g the number that ...e one thinks of, de...ing upon simple number relations.

...t some one choose any number and mul... ...by 3. If the product is even, divide it ...; if odd, add 1 and then divide by 2 ...n multiply the result by 3, and divide the ...uct by 9, neglecting any remainder, and ...l the quotient n. The number thought of ...be 2n if the product when the number first ...ght of multiplied by 3 was even: it will be ...plus 1 if that product was odd. Suppose ...as the number thought of. Multiply by ...; since 9 is odd, add 1 (10); divide by 2 ...; multiply by 3 (15); divide by 9, neglect... the remainder (1). If 1 is then called n, 2n ...is 3, the number thought of at first. If ...as the number, multiply by 3 (12); divide ...; multiply by 3 (18); divide by 9 (2). ...2n is 4, the original number.

...other method is to multiply the number ...; add 6, multiply by 4, add 9, multiply by ...and subtract 165. That result divided by ...will be the number first thought of. Thus, ...t with 8. Multiply by 5 (40); add 6 (46); ...by 4 (184); add 9 (193); multiply ...; subtract 165 (800); divide by 100, ...8 the original number.

...his may be varied in several ways. We may ...the person first multiply by 5, add 6, ...by 2, add 8, multiply by 5, subtract ...and divide by 50. Thus, start with 7. ...by 5 (35); add 6 (41); multiply by ...; add 8 (90); multiply by 5 (450); sub... ...100 (350); divide by 50 (7).

...he may first multiply by 9, add 10, mul... ...by 5, subtract 25, multiply by 4, add ...times the number thought of, subtract 100, ...divide by 200. Thus, start with 9. Mul... ...by 9 (81); add 10 (91); multiply by 5 ...; subtract 25 (430); multiply by 4 ...; plus 20 times 9 (1,900); subtract 100 ...; divided by 200 (9).

...he operator must stop at such a point that ...person who has chosen the number does ...know the last two or three operations. In ...way and by varying the stopping point it ...ually puzzling to decipher the method at ...

...t some one choose some number, say n. ...him multiply it by any number you ...e, say a; then add to that result any ...you choose, say b; then divide by any ...er you choose, say c; then find a/c of the ...al number, and subtract this result from ...result obtained when the division by c was .... The result will always be a value equal ..., and since you know the values of b and ...s easy for you to tell the answer. Thus, ...ose you decide that you will use the ...s a equals 4, b equals 5, and c equals 6. ...he person choose any number, say 6. He ...multiplies by a or 4, getting 24; then ...or 5 (29); then divides by c or 6 (4 5/6); ...4/6 of the original number, 6, is 4, and ...he subtracts 4 from 4 5/6 the result is ...which is b/c.

How to Tell Three Numbers

...E is a method of telling three numbers ...at once. Let the person choose any three ...than 10 in value. Multiply anyone ...them by 2, add 3, multiply by 5, and add 7. ...add the second number, multiply by 2, ...add 3. Then add the third number. ...he tells you the result at this point, ...simply subtract 235 from his result, and ...difference will give you the three numbers. ...suppose he chooses 781. Call the first ...7: multiply by 2 (14); add 3 (17); ...multiply by 5 (85); add 7 (92); add the second ...number, 8 (100); multiply by 2 (200); add 3 ...; multiply by 5 (1,015); add the third ...number, 1 (1,016). You subtract 235, and the ...is 781, or the three numbers thought of. ...results will come out just as well no matter ...of the three numbers is taken for the first, second, and third.

Select any number less than 60. Divide it by 3, 4, and 5, and name the remainders. Multiply the first remainder by 40, the second by 45, and the third by 36. Add the three products, and divide the sum by 60, and the remainder will be the number first thought of. Thus, start with 43. Dividing by 3, 4, and 5 will give remainders of 1, 3, and 3. Multiplying these by 40, 45 and 36 respectively, will give 40, 135, and 108. The sum of these three numbers is 283, which will give a remainder of 43, the original number, when it is divided by 60.

About 1612 the following problem appeared: Let some one called A select any number of counters. Let another person, B, take p times as many where you choose the value of p. Then let A give q counters to B where you choose the value of q. Then B gives A p times the number A has left. B will then have q (p plus 1) counters left. Thus, suppose you assign the value of 2 to q, and 3 to p. Suppose A selects 5 counters. B takes 15. A gives B 2, making 17 for B and 3 for A. B then gives A p or 3 times 3 or 9, which leaves him 8. Then q (p plus 1) is equal to 2 (3 plus 1), or 2 times 4, which is 8, the number that B still has in his possession.

Solving by Reversal

A CURIOUS result is seen in the following: Take any three digits; reverse them, and find the difference between the two values. Reverse this difference, and add the reversed difference to the first difference, and the result will always be 1,089. Thus, take 987; reverse, and we get 789. The difference is 198; the reversed difference is 891. The sum of 189 and 891 is 1,089.

Take any two numbers, one odd and the other even. Let A select either number, and B the other. You can tell which number A selects by this method. Ask A to multiply his number by 2, and B to multiply his by 3. Tell them to add the two products and tell the sum. If the sum is odd, A chose the even number; but if it is even, then A chose the odd number.

A more modern problem is the following: Choose any three digits. Reverse the order of the digits and get the difference. If the first or last digit of the difference is known, you can always tell the entire difference, since the difference will always have for its middle figure 9. Then if the first figure of the difference is known, the third is always 9 minus the first; in the same way the first is always 9 minus the third. If either the first or last figure is 9, the difference is 99. Thus, take 756. Reverse and get 657. The difference is 99. If we take 853 and reverse, we get 358, and the difference is 495. Since the sum of the first and last digits of the difference is 9, the other one can be told when either is known.

EDWARD ROTH of Philadelphia, commenting on one of Mr. Emery's earlier articles on "Tricks with Numbers," writes:

"Your mathematical correspondents certainly know a good deal about the curiosities of arithmetic: but do they know of anything more singular than the following combination?

"1,176, 470, 588, 235,294

"Multiplied by 2, this gives: 2,352,941,176,-470,588, which is exactly the same figures over again in almost exactly the same order, 8 being taken from the middle, and set in the unit place.

"Multiplied by 3, it gives: 3,529,411,764,-705,882, which, as far as figures go, is exactly the same as before, 2 being made the unit.

"Multiplied by 4, it gives: 4,705,882,352,-941,176, figures still the same, and in the same order, only 6 is made the unit.

"Multiplication by any Arabic digit will give similar results. This I have never seen before, and came on it by accident."

Stories of the Stump

Continued from page 10

...in the matrimonial political bargain ...of to-day. She is casting one ogling ...toward you, young man. But with the ...she is looking backward after numerous ...al husbands, old flames, and divorcees. ...divorced Cleveland when she married .... She deserted Bryan when she eloped ...Parker. And after a brief and tempestu... ...existence with Parker she left him, and ...she is dividing her time between kissing ...in the dark and flirting with Bryan in ...daylight. She has been married, divorced, ...deserted so many times that no man can ...to-day whether she is maid, wife, or widow ...grass, or sod), or how long she will remain ...to her vows."

Some of J. Adam Bede's Humor

...E are some stories by Representative J. ...Adam Bede of Minnesota, who has been ...The Humorist of the House.

...1896 the country was sick and the ...would crowd eagerly round any vender ...patent nostrums. Anyone who could talk ...was an orator that year, and political ...meetings were loath to disperse. Mr. Bryan ...his followers wild with his eloquence. But ...the country had recovered its health, ...tale of woe was not so welcome, and the ...of the orator had lost its cunning. ...two Democrats were returning home from ...meeting during the latter campaign, ...what disappointed in their own feelings, ...one broke the sorrowful silence by saying: ...Bryan ain't the man he used to be.'

"'No,' replied the other, 'and he never was.'"

"The 16 to 1 free silver folks told us that if we would give them free coinage at the old ratio wages would be higher and living would be cheaper. This reminds me of an incident that once occurred in school. The teacher was conducting a sort of nature study, and in course of the recitation held up an egg and asked all the little folks that could tell where the egg came from to raise their hands. Many hands went up—and of course the answer was that the egg came from the hen. Then the teacher said she wanted to ask one more question, and asked where the hen came from. Again the hands went up; and the answer was given that the hen came from the egg. This seemed like working in a circle,—the egg from the hen, and the hen from the egg,—and a little lad in a back seat cried out:

"'Teacher, how do you start that game?'

"The Democratic party reminds me of the billy-goat that was traveling on a Southern railroad, and when the section men were clearing up the wreck they found him under several tons of debris. However, he had not wholly wasted his time; but had chewed up everything in reach, and incidentally had devoured his own tag. The negro who finally pulled him out of the rubbish exclaimed:

"'Dis here goat has done e't up where he's gwine.'

"So the Democratic party since the wreck of '96 has lost its tag, and no one but the Lord of Hosts and possibly John Sharp Williams can tell when and where it will land."

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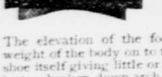

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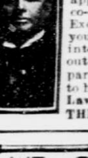

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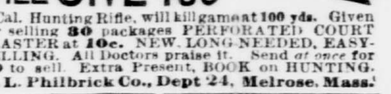

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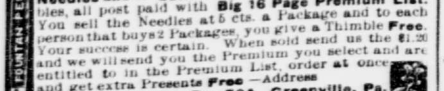

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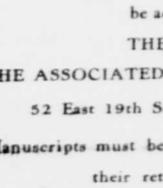

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