COLLECTANEA

Latvian Mathematical Riddles

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Although a farmer by inclination, Janis Plavnieks has worked during his
lifetime as a member of a road crew in Russia, as a steam generator op-
erator in a large paper factory in Latvia, as a hand in a sawmill in a
Displaced Persons camp in Germany, and as a nurseryman and a janitor in
the United States. Born in Russia on June 26, 1886, but reared in Latvia,
Tetis* was the third of four children. He speaks highly of his oldest
sister's intelligence, "She should have gone to Moscow or Petrograd. She
had a terrific head on her shoulders." Eventually, this sister finished
high school and worked as a governess. The other sister "was rather op-
pressed. She had no special talents. She was simple and developed ra-
ther crudely." During World War II, Tetis' younger brother, now retired,
emigrated from Latvia to Australia, where he worked as an engineer.

Between the two world wars, during Latvia's years of independence, Tetis
and my grandmother worked his family's farm, slowly improving upon it
until they could live prosperously. In 1944, as German bombs dropped all
about them, they abandoned it and watched their houses and barns full of
grain and livestock burn. Then, as already once before during the First
World War, when they left Latvia for the relative safety and comfort of
Russia, they now fled to Germany, settling in various Displaced Persons
camps for nearly five years. Although they intended to return to Latvia
after the war, they chose to emigrate to the United States rather than
return to a Communist-occupied homeland. A son, then seventeen, was cap-
tured by the Russians in Latvia in 1944 and was lost to his parents for
many years. Communication with him is now re-established and he has
even visited her in the United States from Latvia.

To pass the time after going on pension, Tetis reads constantly, aided
by a thick magnifying lens. He has now lost his sight almost entirely.
He has nothing to occupy him except walking the length of the yard for
exercise. In the present boredom of his days, my collecting proved im-
mensely ego-lifting for him. Whereas at first he severely devalued the
store of tales, anecdotes, riddles, and songs at his command, gradually
he came to take real pleasure in the telling, and even more so in his
memory and knowledge, of these traditions.

He prides himself most on his memory of the complicated mathematical
puzzles, and values these as a means for sharpening the mind. He com-
pares their instructional value favorably with what a person might learn
in a formal school setting, and is amused when "educated" people fumble
and ponder over one of his problems. Often while doing the monotonous
task of plowing his fields, Tetis recalls, he would pose riddles and
problems to himself, and while struggling to recall their solutions, pass

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*Janis Plavnieks is my maternal grandfather, and I have always called him
"Tetis," which in Latvian means "father."

the time more quickly. Just as his father before him, so Tetis, too,
gave his children puzzles to solve. He knows several games that involve
arranging match sticks in a certain order that both challenges the powers
of abstraction and memory, and my mother remembers working them out with
him as a child.

1. 100 Geese

A flock of geese are swimming on a pond. One goose flies over and greets
them, "Hello, 100 geese." They correct him, saying, "We're not 100, but
to make 100 we need twice as many as we are, half a much, one-fourth as
much, and you, too. Then there will be 100." How many geese are in the
pond?

Answer: There are thirty-six in the pond.

Now, start figuring it out: thirty-six and thirty-six are seventy-two
and eighteen (half of their number) is ninety, and then the quarter is
nine, and that's ninety-nine, add one more and you've got 100.

I.: How can you remember it?

T.: My father knew it. He gave me that one to figure out.

2. Kegs of Beer

Bruce and I, we go to Indianapolis to buy beer. He has a five-gallon
keg and I have a three-gallon keg. We bought them. But on the road, we
meet up with someone who has an eight-gallon keg. We have no other uten-
sils. We need to divide the eight gallons into half. How can we do this
with those two kegs, five gallons and three gallons? (Note: Actually
there are the three kegs to work with; two, five, and eight gallons.
Plus, Tetis neglects to say so, but the eight-gallon keg is empty.)

Solution: From the eight-gallon keg you fill the five. And then -- I
hope I can do this -- from the five -- aha -- there -- fill the three,
so you have two gallons left in the five. And then the -- I've forgot-
ten -- take the three and pour it....It's not so easy to figure this out.
You've got two gallons -- now -- wait -- he fills....

Oh, it's this way.

He fills the three-gallon keg from the eight and then pours the three
gallons into the five, then he fills the three up again. Now only two
more gallons will go into the five, so that one gallon is left in the
three-gallon keg. Now you're finished. You quickly pour the five gal-
lons back in the eight-gallon keg; it then is empty. From the three-
gallon keg pour in the one gallon into the five-gallon keg and from the
eight-gallon keg into the three-gallon keg and then into the five-gallon
keg and you've got four and four.

T.: Maybe my father told me this one, I'm not sure.

3. Wild Pigs

A neighborhood boy and I were hunting wild pigs. Suddenly the boy comes to me and says, "Give me one of your pigs, then I'll have twice as many as you." But I answer him, "You give me one, then I'll have as many as you." How many did each have?

Solution: You have to guess a number so that if one gives he has just as many; if the other gives, then he has double.

Now, you have to find the number. I think it's five and seven. For those five, if you give one, then he'll have eight; twice as many. But if you take one from the seven, then he gets six and they each have the same amount.

T.: So you see, I am a mathematician, too. You can tell those to one or two Americans.

(Note: Originally, Tetis told this with the numbers three and five. But when I saw him again one week later, he had obviously been mulling it over and changed the numbers to five and seven. I give here his final version.

4-A. Horses and Oats

I.: The other day you started one about horses and oats, but didn't finish. How did it go?

T.: I can't figure it out.

I.: What was the question? What was the riddle?

T.: Well, it's like you say; two farmers are driving to market. One has so much in oats and the other so much. In the city, a third happens along and they feed the oats to the three horses equally. Fed them equally. but I don't remember how much the third paid. They were given money for their oats. The third -- the little one -- wasn't satisfied. So it turned out that each had...don't remember. The solution was that you had to know the old measurements..."Pura ir 3 sieki." And so that the "puri" must be divided into "sieki." So that -- I don't know. Maybe someday I can untangle it, but that's a pretty hard one. And once you've partially fortotten....

I.: Then you don't even know where to begin.

T.: Yes....

4-B. Horses and Oats

Well, last night, during the night, I figured out the one about the oats.

Two neighbors rode into Riga, into the city, to stay for a time. One has two "puri" oats for feeding his horse; the other has three. They think that will be enough. After a while, still a third neighbor arrives. He says, "I have to buy oats for my horse." One of the neighbors

says, "Well, it won't be necessary. We have plenty. There'll be enough for all three."

Well, if so, then they feed the horses, give each an equal portion. And when the oats are all eaten, the third neighbor gets ready to leave. And he gives the one who had three "puri" $5 to pay for the oats. To the one who had two "puri" he gives $1 only. He says, "No, I had two 'puri'; I need more." So the third says, "Figure it out correctly, then I'll pay you more."

Now, figure it out: how much did he have to pay -- the little one -- to the neighbor who had two "puri"? Because "puri" is a Latvian measurement. In a "puri" are three "sieki." Like pounds and ounces, because each measurement is divided into smaller amounts. Now you can figure it out for me, how much does each one deserve?

Solution: Now you see, it was this way. The little one had two "puri" or six "siekas." You see, "puri" can't be divided into three parts equally. So it all gets converted to "siekas." Now, the other had three "puri," so he had nine "siekas." So, between the both of them, they had fifteen "siekas." And so, since each horse was fed equally, it comes out that each was given five "siekas." And so the big one from his quantity can give only four, because the five his own horse ate up. For that, he can't take money. The little one had six, and so he had only one "sieka" to give to the third. So, the little one deserved only $1.

Horses and Oats (Commentary)

I.: And so all three had enough? And you finally rigured it out?

T.: Yes, well, see, the more important is the problem must be given correctly. If the problem has a mistake in it, then you can't figure it out.

I.: But still, there's a bit of knowing how these work.

T.: No, a little bit, yes. But it's interesting. You struggle until you get it.

I.: That's so. But to remember it all these years. Can you remember when would be the last time you told any of these stories?

T.: No, that I can't remember. Well, when that Donis began to be friendly with your parents. He boasted that he was a big mathematician. Then I told him the one about the kegs of beer and the one about the geese.

I.: Did he solve them?

T.: No, I think not. Because those geese -- that one's pretty -- there you need to get the first number of geese. When you get that, then you can go on.