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Norm Venner's fancy was pretty well fixed on thoughts of electronic calculators—until the invention started making passes at the inventor!

THE Romantic Analogue

By W. W. Skupeldyckle

Illustrated by Ed Erish

MATHEMATICIANS are just like people: old, young, fat, thin, male, female. This one was male, thirty-five, with steady brown eyes and a nice smile when he remembered to use it. His name was Norman Venner, and besides being a mathematical whiz generally, he had designed and built an electronic brain, or calculator, which was in some ways smarter than himself—and a lot less diffident.

Electronic calculators are invariably given acronymic names such as BINAC, SEAC, and MANIAC, and nine out of ten of them are of the digital type. This is a nice way of saying that they count on their fingers. They're nearly as big as yachts, and cost more, but can calculate a million times faster than any human.

Norm's machine was of the analogue type, which is less flexible, less complex, and vastly smaller

and cheaper. He called it the ICWEA (ICK-wee-ah), which stood for "I Can Work 'Em All!" It could, too! It was especially good at deriving equations from curves, which was really something.

Charley Oglethorpe burst into the office one morning, catching Norm in a brown study. "Hi, Genius. How is she perking now?"

"All right, except the pen skips a little sometimes and makes a messy curve."

"Have to damp that arm better. When can I have her to work on?"

"Soon as I finish those Mugu problems."

Charley stared at him.

"Mugu. Guided-missile center. It's nice business if we can get it—the digitals are all booked up months ahead, and the particular type of problem they send us is right up our alley."

"I thought you were kidding me,



like that Boolean Algebra stuff."

"Wasn't kidding then, either."

"I'll stick to instrument-making, thanks. You math guys never have any fun."

Norm shrugged, turned to the telephone, and called an extension.

"Hermosa." It was a rich, pleasant voice.

"Vic? How about the rest of the Mugu cards? Ready yet?"

"I'll send them up right away. Just finished them."

"Who was that?" Charley inquired.

"Vic Hermosa. Smart boy."

Charley smiled a little.

THERE WAS a knock at the door.

"Come in," Norm called. The door opened, and a small, neat girl entered. Her long bob was dark and silky, but windblown. She tossed her head and her hair settled into place, as if she had just brushed it. She extended a pack of punched cards.

"Thank you," Norm said, gravely.

The girl looked up at him suddenly, and he stepped back a little. She had surprising, deep-violet eyes, and their glance seemed to have a tangible impact. She nodded grave acknowledgment and left.

"Damn it, I wish I could do that!" Norm complained.

"Make goo-goo eyes?"

"No. Shake my head so my hair would automatically be combed like hers. I've been fighting this cowlick ever since I've been a kid—stocking caps, gunk, the works.

Still got it. And the part moves around and I have to hunt for it."

"Know who she is?"

"Nope. Clerk, messenger, I guess. They're always hiring new ones."

"Doesn't she ever speak?"

"Of course she—come to think of it, I've never heard her. Must say it's a relief after the usual yackety-yack. Haven't anything to talk to her about, anyway. She's just a child."

"A pretty one, though."

"Yes, she is."

"You sure don't know anything about women. If anyone made eyes at me that way, I'd do something about it."

"What, for instance?" Norm inquired dryly.

"Well, of course, I'm married. But I'd find out who she was, anyhow. Sometimes I think you're dead and don't know it."

"Sometimes I agree with you," Norm said. He fed one of the punch cards into the transmitter head, which fingered the holes and told ICWEA what the problem was. ICWEA began drawing a curve on the curve tracer. It would have taken Norm or anyone else days to arrive at the answer. "See? Skips here and there, but I can ink in the gaps."

"Looks like the pen catches on the paper a little. I'll grind the point while I'm at it. Say, that thing really thinks, doesn't it?"

"In a way. Generally, the digitals have it all over the analogues when it comes to reasoning, but I built an extra brain into her."

"Where?"

"The 'Y' path. Remember? Tries several appropriate methods in suc-

cession. I analyzed my own methods of attack, and built the same methods into her. She's an electronic me, except faster and more accurate."

"I bet. She's more alive than you are. Why don't you step out a little? First thing you know, you'll be getting old, and it'll be too late."

"Leave the match-making to the women. I may be old, but I'm not an old fool. It's fall, not spring."

"Yeah? All you need to be an old fool is just a little more time."

NORM IGNORED HIM, and took a card from his desk. It seemed to be an extra, not with the pack. He put it in the machine. The curve-tracer began to draw a rather abrupt curve, which meandered half across the sheet before Norm realized what it was. Suddenly, an image leaped to his mind's eye and he watched with fascination while the pen traced this mathematical impossibility to the far end of the paper, and in obedience to several successive negative factors in the problem retraced in the opposite direction a little lower down.

A head, a slightly lifted elbow, full rounded breast, a knee luxuriously drawn up, a dangling arm, all in one continuous line. There was nothing obvious about it; it was formalized, but with the individual style that is the artist's signature. Once seen, the image persisted.

"Hey, Charley, look at this!"

"Yeah. What about it?"

"What about it! You ever see anything like it?"

"Sure. It's a closed loop, like a hysteresis curve."

"An hysteresis curve. But this isn't one. Look closely."

"Of course, it has harmonics and variables in it. Might be one of those gas-discharge curves, if the gas tube happened to be defective. I've seen some funny . . ."

"Look! It's a reclining figure, with the head turned toward you—see?—and the forearm over the head—*here*. Breast, knee here, foot with the toe pointed, calf, thigh, and the near arm hanging. Remarkable, once you see it . . ."

"You're crazy. All I can see is a closed loop with some wrinkles in it."

"Why, it's nearly as plain as a photograph! I can't understand . . ."

"Plain, my eye! If that's the arm hanging down, and this the hand, where are the fingers? That 'hand' is just an oval. You got some imagination if you can get a reclining figure out of that."

"Not a nude of the beer-garden type, I grant you. This is real art. Know what this means? Have you any idea how complex a formula must be to trace a curve like this? Just a plain hyperbola is bad enough. This is a test of the machine. Those Mugu boys have worked out this formula to see if she could break it down and draw the equivalent curve, though I don't see how they did it. Even the larger digitals would find this a tough nut to crack, but our baby is a whiz at curves, see? I wonder how they justified the machine-time on it. Of course it is barely possible that they derived the equa-

tion themselves, but it must have taken weeks if they did."

"Maybe it took us long as you say, but I still can't see any reclining figure in that curve. It's just a closed curve with some wiggles and bumps on it."

"In any case, I'm going to send this to Mugu right away. They'll want to know how long it took."

"I wouldn't, if I were you."

"Why not?"

"Maybe trouble developed in the machine. Better run some more cards through it first. But right now I'm going home. We're having a roast tonight. Say, why don't you come to supper with us? Alice would be delighted—she was just wondering what happened to you. I'll phone her . . ."

"No, no! I have to—look, I got to find out what this means, you see? It isn't that—explain it to Alice, will you? We need this contract, need all the work we can get, you understand?"

"Sure, sure. How about next week? OK? Well, see you in the morning." Charley left, grinning to himself as he closed the door behind him.

NORM DIDN'T SEE the grin. He was already puzzled enough; IGWEA behaved herself perfectly on the next five cards, and kept her mind on her business. Meanwhile, Norm studied the first curve again. Funny Charley couldn't see it—the figure was puzzling at first, until you got the idea, but then it was so clear. Or was it?

Suddenly, he couldn't see it himself. He turned it upside down and

sideways; it was just a funny closed curve, having neither mathematical nor structural significance. Maybe he was going crazy!

He threw the curve down on his desk and, soothed by the whirring of the tracer motor, fell into a brown study. Suddenly, the image of the brunette with the violet eyes appeared. No reclining nude, she; she shook her head in that habitual gesture and her long bob fell perfectly in place. She turned, with demurely downcast lashes and looked up at him with her violet eyes, and Norm came out of his trance with a start.

He removed the last curve—a simple hyperbolic curve, probably a problem in attenuation or decay of some kind—and put in the last punch-card. The machine started up immediately; the curve was elliptical. Then a vertical down-stroke, retracted and with a gentle half-loop added. It was writing! P-r-o-p-i-n-q . . . What might this be? He watched, fascinated, as the letters continued. "Propinquity is the mother of love," it said, and stopped.

His trained mathematical logic gave him an immediate solution to the enigma: he was cracking up. It was utterly impossible to derive the equation to write "propinquity" in Spencerian script in less than a hundred man-hours, nor could a mathematical calculator be hired for so frivolous a purpose. It was fantastic, impossible; therefore, it was not so, and he was either dreaming or crazy. Maybe thinking about that little brunette . . . Surely not; still, he had been driving himself pretty hard. In the morn-

ing he would be fresh and alert. If it were a trick, he'd catch the trickster. And if it turned out to be a perfectly logical curve, he'd see a doctor.

He left the curve in the machine, closed the ventilator in the wall over his desk, and turned on the burglar alarm. This was nothing so crude as a loose board with a switch, but a quite elaborate electronic circuit that produced a field near the door. It wouldn't work on ghosts, but if any material body entered that field, it would trip the alarm and start a regular Mardi Gras. Security required by government contracts hardly demanded so much, but for a small plant it was sufficiently cheap, and Charley had had a lot of fun with it. Charley! Have to keep him out, too; and being its daddy, he'd know how to disable the alarm. Of course, it would really be sufficient to tie a thread across the door which would break if anyone entered. He had no thread, but after a moment's thought, he pulled a three-cent stamp out of his bill-fold, and turned out the office-light. After glancing up and down the hall, he stuck the stamp on the door so that it would tear if the door opened.

IN THE MORNING, the stamp was still intact, and it was hard to see, even in broad daylight. The paper in the curve-tracer was perfectly blank, and there was no punch-card in the transmitter head. It might still be an elaborate joke, but the chances were small. He might be cracking up, or may have imagined the whole thing.

The best thing to do would be to put it entirely out of his mind.

He succeeded in this until mid-morning, when IGWEA called him a "handsome devil." He jerked the punch-card out of the transmitter and called Vic.

"Hermosa."

That voice! It made chills run up and down his backbone. A man had no right to a voice like that. "Vic? Bring up the calculations for the last batch of punch-cards, will you? I want to check something. The card numbers are F-141 through F-152."

"Right away."

Vic wasn't especially gabby. A good-looking young Latin, who knew as much math as most, they'd probably lose him to the draft any day now. Presently, someone knocked on the door.

"Come in."

It wasn't Vic; it was the girl. She laid the pack of problems and their attached work-sheets on the desk, shook her hair into place—did she even have to comb it in the morning when she got up?—looked him briefly in the eye, and turned to go.

"How is Vic these days?" Norm inquired, whimsically. "Is he able to get about?"

The girl smiled politely at this obvious badinage and left.

He checked the problems against cards as he came to them. He knew the punch code well enough to do this in his head, since the kind of operation indicated was quite obvious. But the problems ended with F-151, and the "handsome devil" card was F-152. He got on the phone again.

"Vic? What's your next card number?"

"F-153." One expected a little guy to have a high voice; this one was quite deep, but soft.

"Are the cards numbered very far ahead?"

"We usually number a couple of dozen cards, and assign the numbers to the problems as they come in, from a scratch sheet."

"Any of the cards been lost?"

"Oh yes, on occasion. So far, we've recovered them all—there are only two rooms where they could be, Up there or down here."

That voice! How could a man have a voice like that? And why should he care if one did? Why even notice it? Instead of going to the cafeteria for lunch, he drove downtown and consulted the family doctor, who laughed at him. Reassured, he returned to the plant and got a sandwich and milk before going to his office. Old Doc Heffelbauer might be wrong, but he usually wasn't. Norm liked several men, but he didn't dream about any of them; if he was off his rocker, it was in some other manner. Visual delusions, for instance.

The thing to do was to see Vic face to face. He called the office manager. "Henry? Send Vic Hermosa up there, will you? I want to talk to him."

"Vic Hermosa? He's in the Army. Didn't you know?"

"No, I didn't. Who is the guy that answers the phone in that fruity voice?"

Henry lowered his voice. "Guy? That's Vic's sister Virginia. She took Vic's place when he left. Sim-

plified the security investigation, and she's good, too. About as good as Vic, I'd say."

"You mean to tell me a little girl like her could have a voice that deep?"

"Startling, isn't it? Of course, it's actually a low contralto or tenor, but you expect her to be a lyric soprano. Shall I send her up to see you."

"No, no. I want to think a bit first. Say, who interviewed her?"

"Charley, I suppose. Just a formality, anyhow; the Hermosas and the Ogletorphes are neighbors, you know."

WONDERFUL STUFF! Esoteric phenomena in a sealed office! His very own calculating machine made calculated love to him; his best friend was evasive, and the junior mathematician he thought he had been talking to every day for a couple of weeks was in the army. He might hammer away at all concerned until all the cards were accounted for, but that would disrupt office routine. Strategy, that was the thing! Be mighty peculiar if he couldn't break up this business, now that he had an idea what was going on.

But did he? Whoever punched the cards needed the proper equations derived first, and that called for a digital or an analogue computer. Preferably his own IGWEA, because she was especially good at curves. Deriving them by the old methods was just too much horse-work for any joke. And it didn't have to be a joke, either. The joke might be just the cover for a more

sinister activity—*booh!* If that were the case, why call attention to it with funny-business?

But what hurt was the girl's being mixed up in it. He could take a rib from Charley, for instance, but the girl was practically a stranger—unfortunately. Women could be cruel, as his mother had often warned him. He thought of his mother's last year in the hospital and winced. She had sacrificed so much for him; and yet, was it really better to be a free bachelor than an old family man like Charley? There wasn't anything the matter with Alice that he could see. Charley loved her; that was plain.

Tonight should solve the thing, once and for all. He left the plant, speaking to everyone he met as he usually did. Then he sneaked back in, with the guard's help, and hid in his own office with the lights out.

His phase rang and he almost answered it before he remembered that he was supposed to be gone. The building was by no means deserted; probably there was someone working overtime in more than one department, though the main business for the day was finished. After a bit, the phone rang again, and he ignored it.

Waiting was hard. He couldn't read, so he let his mind wander: the next modification to ICWEA—what a romantic old thing she was! He needed a haircut; he'd have to get one tomorrow, before the hair grew down over his ears. What a voice that girl had—and those eyes! Would they get further work from Mugu? How could they con-

tact other Government agencies? ICWEA was working out pretty good; would it be better to try to sell ICWEAs to anyone who wanted them, or to keep the old girl busy and work problems for others? Eventually, the former, though for the time being it might be better to continue as they were until the old girl was well known. Under present conditions, that shouldn't take—what was that hissing noise, a radiator?

He listened closely. Hiss, hiss, hiss. No, it was a rubbing sound, with a scrape and an occasional hollow thump. Not loud, but close at hand. The ventilating system—how obvious, now! He watched a white hand disengage the catches and carefully lower the grill to his desk. A small figure in white coveralls wormed its way out of the opening, landed on its hands on top of his desk, kicked feet clear and cartwheeled to the floor with disdainful ease. A head-shake settled a long bob in place; who could do that? Virginia Hermosa, and no one else!

She couldn't see him against the shine of the window. She turned ICWEA on and let her warm up, meanwhile fastening a large sheet of paper on the bed of the curve-tracer with tape. She put a blank card in the punching head, opened the door of the patching-panel cabinet and rearranged the patch-cords there.

What a lab assistant she would make! Wasted in Set-up; anyone could punch cards, with a little practice. Well, not anyone, but any mathematician could. How thoroughly she knew this machine!

Charley must have told her, or her brother, plenty!

With the curve-tracer running at slow speed, she held the stylus steadily on the words she had written on the paper; the coordinates and rates were fed into ICWEA's brain, she derived the horrible equations corresponding to the script, and obligingly translated these in turn to punchings on the card.

So simple, when you saw it. But who would think of putting a burglar alarm on an air-duct? She could go all over the building through the walls if she chose. She was small enough to get through the ducts easily, though the vertical sections must be tough, even for so athletic a girl.

The punching head stopped. Virginia restored everything to its original condition, stuck the card she had punched into a pile of them, folded the paper and stuffed it into her pocket, and turned to go. Norm put on the lights.

STARTLED, she whirled, churning the air with her hands to keep her balance. He held his hand out for the paper.

"No!" she said, her voice shrill with excitement.

Wordlessly, he closed in on her, and after a brief struggle pulled the paper out of her pocket.

It said, simply, "I love you." Norm looked at Virginia, who turned her head away.

"I can't appreciate the joke just now, though I realize it must be very funny. Charley will enjoy it. But what a lot of trouble. Suppose

you had got stuck in the duct, then what? Is it worth the risk? And the violation of security is very serious."

"I'm going to quit anyway," she muttered.

So deep a voice for such a small girl! "Why did you do it?"

"Well, it all started as a joke. Charley said you were shy, and—and—well . . ."

"I see. Natural enough, I suppose. And you pretended to be your brother on the phone."

"No, I never said I was Vic," she denied, quickly.

He was handling this all wrong; he wasn't getting anywhere. All this was just talk, evasive talk.

"Charley hired you?"

"Yes. When Vic left for basic training."

"I see. Charley's quite a joker, and it was hard to refuse him."

"It was kind of a joke at first, but you're overlooking something: he's very fond of you. He really is! He brags all the time about how smart you are, and what a nice guy."

"Charley's married, and he wants to see me married, too."

"And you don't like girls?"

"Listen, you made that drawing, too, and all the other stuff?"

"Yes."

An idea raised its pretty head. "Listen, I've decided to be very angry about this. You've made a fool of me, and I'm not going to let you get away with it. Now, I know a place that's quiet, and has very good steaks; I'm going to take you to supper and bawl you out. Better get into street-clothes, and don't take all night."

"Sorry, I couldn't possibly. Some

other time, perhaps."

"Tonight. Now. Get going."

"No. I have a date."

"Break it!"

"No! You may be my boss, and I may be a forward hussy, but tonight I'm going home, and you can't stop me!"

How silly could you get? Suddenly he understood the way of a man with a maid; love was older than conversation, and they both saw and understood through and beyond any silly words. In fact, the sillier the words, the better!

"That's what you think! You're going with me, or you're going to jail. They'll put you in a dark cell with the rats. They have their own specially-bred rats, you know." He leered, slyly.

"You wouldn't dare!"

He shrugged, elaborately, and turned to the phone. She darted past him to the door and he caught her, pulled her back out of the hall. She was surprisingly strong and determined, and she ducked when he kissed her.

"That one was a mess, wasn't it?" he complained.

She relaxed and began to laugh, and he joined her. She looked into his eyes a long moment, and

pulled his head down, kissed him tenderly. "You don't give a girl much choice—one big rat or a lot of little ones."

"I'll give you no choice at all. I'll teach you to play tricks on me! Hurry up and change."

"One of the girls keeps a semi-formal in her locker. I can borrow it and we could go dancing."

"I don't dance. Never learned. Couldn't we just talk?"

"We could, but we won't; you'll never learn any younger. You seem light enough on your feet. Come on, it'll be fun!"

"Tonight I can do anything! You take too long to change, and I'll tear the building down brick by brick with my bare hands, hear me?"

"No, please don't! I'll hurry, I promise!"

He waited impatiently at the door of the locker room. Now that he knew how to talk to a girl, he wanted to talk, and talk, and talk some more. He planned extravagant things to say when she came out, but when she appeared, smiling, he was struck dumb. She took his arm and they half ran, half skipped out of the building to his car.