XAVIER BALILINKINOFF

When I was but thirteen or so, my seventh grade teacher, Milicent Whippoorwill, first acquainted me with the old spelling rule:

I before E,
Except after C,
Or when sounding as A,
As in “neighbor” and “weigh.”

Miss Whippoorwill also used to encourage us to anagram words, in order that we might become more familiar with their spelling. One day she had “gegenschein” on our spelling list, and so I anagrammed it to “hen’s nice egg,” because this was something easily remembered. But, alas, when lesson time came, I applied the rule Miss Whippoorwill had taught us, and misspelled the word. This was my first intimation that “I before E, except after C” is a WEIRD SCIENCE.

I began listing words having an EI unpreceded by a C, such as THEIR, EITHER, NEITHER, WEIRD, REIMBURSE, PROTEIN, BEING, SEEING, SEIZE, FLEETING, FREETING, AGREEING, VEIL, HEIR, NEIGH, NEIGH­BOR, WEIGH, WEIGHT, SLEIGH, EIGHT, EIDER-DOWN, EIDETIC, REITERATE, PEIPING, SKEIN, PEIGNOR, DEITY, REINDEER, HEIGHT, SLEIGHT, SEISMIC, REINS, REIGN, SOVEREIGNTY, OPHICLEIDE, FREIGHTER, MEIN, ONOMATOPOEIA, MEIOSIS, BOEING, HYGEIA, OBEISANCE, NEREID, GEGENSCHEIN and EINSTEIN (which breaks the rule twice), and the list grew very long.

I then turned my attention to those rarer words which break the rule by containing a CIE. The largest group of these words (composed mostly of plurals, such as POLICIES) are the ones in which the CIE is followed by an S. I found about 400 CIES words. Four of these contained CIE twice each:

SUFFICIENCIES
EFFICIENCIES
DEFICIENCIES
PROFICIENCIES

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These four words were also members of a small group of nine words in which I found a CIE followed by an N. The other five were:

ANCIENT
SCIENCE
CONSCIENCE
OMNISCIENCE
NESSCIENCE

Also in my list were eleven words in which CIE was followed by an R:

SAUCIER FLEECIER
CHANCIER RACIER
SPICIER FANCIER
JUICIER GLACIER
ICIER FINANCIER
LACIER

There was also one word containing CIED: FANCIED and one word containing CIET: SOCIETY.

Included in the 400 CIES words were about 40 words denoting various forms of divination. Some of these words were really quite baroque:

CATOPTROMANCIES—Divinations by looking at a mirror under water.
STICHOMANCIES—Divinations by random literary extracts.
ORNITHOMANCIES—Divinations from the flights of birds.
BIBLIOMANCIES—Divinations by the Bible or by books.
RHABDOMANCIES—Divinations with the divining-rod.
ONOMANCIES—Divinations by the letters of a name.
LAMPADOMANCIES—Divinations from a torch flame.

Among those 40 words I found one very special word: ONEIROMANCIES, which means “Divinations by means of dreams.” This was the only word I found that broke the rule Miss Whippoorwill gave us in all possible ways. It contained an EI unpreceded by a C, and which did not sound like A, as in WEIGH, but like I, as in HEIGHT; and it also contained a CIE. I became fascinated with this word, for, as far as I knew, it was the only word which defied the renowned rhyming rule in all respects.

At this time of my life I was a fugitive from a guttersnipe asylum. However, I was not just a beggarly boy who—as the poet says—“Lived in a cellar damp.” Early mornings and late evenings I sold papers in the city. Somewhere I learned to yell HUXTER, HUXTER! RIDDLE DA BODY!, which meant “Extra, extra! Read all about it,” and, consequently, I was more well to do than most boys of my age, and even a few of their parents.

In school Miss Whippoorwill was very kind to me. She always wrote encouraging poems to me on my assignments when she corrected them and returned them to me. Small wonder that I was stupendously happy in school. I had no doubt, really, that I would someday marry Miss Whippoorwill.

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Therefore it was only natural that I communicated my excitement to her in an essay in which I explained the virtues of the word ONEIROMANCIES, explaining also that the uniqueness of the word had caused me to become obsessed with the idea of "divinations by means of dreams." I began my essay thus:

Dear Miss Whippoorwill,

you have probably read in the papers that scientists are making strenuous efforts to attempt to detect the presence of intelligent life in the Far Elsewhere's of the universe by listening for patterns of electromagnetic impulses which may possibly prove meaningful. Oddly, my recent spelling lessons have led me to try to do the same thing—not, of course, by means of any multi-billion dollar installed and staffed radio-technology (for this I lack!), but by employing an altogether different channel—that of dreams . . .

To my consternation, Miss Whippoorwill reacted negatively to my precious brainstorm. I thought surely that the white heat of my inspiration would call forth from her an ultra-ultra rhapsody elevating my thoughts to some ultimately quintessential status or other—all of which I thought would be rather droll (I am unable to give an account of my so-clearly-here-in-evidence deplorably diabolical taint). Instead, she returned it to me with this shockingly cold and unsympathetic poem entitled

**BOSH!**

Piffle!
Pishtosh!
Humbug!
Hogwash!
Claptrap!
Rubbish!
Twaddle!
Flapdoodle!
Poppycock!
Tommyrot!
Balderdash!
Fiddle-faddle!

When Christmas vacation came, I decided to put my theory to an all out, intensive, go-for-broke test. With my wagon I moved two weeks supplies to an unused cabin in the mountains which was owned by a friend of mine. I laid up a stock of firewood, and in short order made myself comfortable. My conviction mounted that the blizzardly loneliness would be conducive to oneiromancies.

That night I huddled under a heap of covers, and put myself into "a listening state," thinking that if I went to sleep that way, I might have a dream in which I would communicate with intelligent beings so distant (as measured along some unknown but properly applicable dimensional axis) that it would make Andromeda seem as close as the pot-bellied stove that kept my winter-beleaguered cabin cozy. I had stacked plenty of writing paper on the table. Pen and ink, too, were

**WORD WAYS**
in readiness. I had not blown out the kerosene lamp—only turned it low; and all matters were adjusted so that I could arise pronto from any significant dream and immediately record it. I had just gotten snug enough in the quilts to start "listening" when I was surprised by a voice (suspiciously like that of Miss Whip­­poorwill, and modulated to express an inordinately poisonous contempt—considering that I was just a relatively uninstructed, 13-year-old boy):

ADDLEBRAINED FATHEAD!

I jumped out of bed and turned the lamp up. There was no one but me in the cabin—though I blush to confess that I looked even in the cupboards and the flour bin. So I sat at the table and wrote (neatly at the top of a new clean page) the two highly derogatory words. Could they contain a message other than the obvious one? Long I pondered this possibility, but decided I needed more to go on. The expression had five syllables, and on a hunch I recorded this number along with the words. Then I turned the lamp low again and started for bed once more, when the voice, as if upon a signal, spoke again:

MUDDLEHEADED NUMSKULL

This time I went straight back to the table, turned up the light again, and recorded the new "communication," and wrote in another column the number of its syllables which were six. I had not the shadow of a shadow of an idea as to whether this number meant anything, but I soon discovered that I had only to turn the lamp very low in order to hear the voice unburden itself of fresh invectives. After a stint of turning the lamp up and down while committing each new utterance to paper, I had accumulated a list of ghostly harangues of increasing length. By syllable-count they yielded an increasing sequence of numbers:

BOOB! IDIOT! IGNORAMUS!
CLOD! BUMPKIN! PUMPKIN-PATED NITWIT!
DUNDERHEAD! ACME OF ASSININITY! PRIZE JACKASS!
BALKY, PIGHEADED, UNYIELDING, PERSISTENT TROUBLE-MAKER!
INCORRIGIBLE FIREBRAND! SMART ALEC! WHIPPERSNAPPER!
MARPLOT!
UNRELENTING, STUBBORN, PERTINACIOUS, IRRECONCILABLE DIE-HARD!
OBSTINATE VISIONARY! LACK-LUSTER, PESTIFEROUS PUPPY!
ASTROLOGER!
CLAIRAUDIENT CRANK! EXTRASENSORY QUACK!
SERENDIPITIOUS NUMERALOGIST OF INSULTS!
PSEUDOJURISPRUDENTIAL SEER OF LOOPOLES IN WORDS AND NUMBERS! SHYSTER'S APPRENTICE IN PSYCHIC LAW, STOP!
BUMBLING MEDDLER IN MATHEMAGICAL MUMMERY!
NUMBER FUMBLER! BEWARE OF MADNESS! DESIST!
CEASE! HALT! STOP!
I did not turn the lamp down again after receiving this four-fold warning or command. The whole supernatural business was not a little perturbing. Nevertheless, I proceeded matter-of-factly to construct a table of the twelve numbers obtainable by counting the syllables of the twelve spooky outbursts which I had captured so neatly on paper:

5, 6, 8, 9, 14, 15, 16, 18, 20, 24, 26, 27, ...

The first number was the only prime number. I had a weird feeling that I should be able to predict the next number; and behind that, I felt a queer, almost physical insistence that the syllable counts were actually the significant thing. But I could find no numerical idea by means of which I could generate that sequence, though I pondered it until I was weary. I wondered, too, why all these messages were delivered in Miss Whippoorwill's voice. Were her thoughts and emotions about me the "carrier" which some Power had "modulated" numerically?

Well, I couldn't sit up all night, so I turned the lamp low and jumped into bed and pulled the covers over my head, flooded with a wild mixture of alarm and excruciating curiosity. What was the key to that sequence? As if responding to my thoughts, the voice cut in:

DOLT! DUNCE! CHARLATAN!

Five syllables! The number 5, then, was in some way the key! It occurred to me that the prime factors of the second term, 6, were 3 and 2—and these summed to 5. The second term was thus reducible to the first term. Was this coincidence, or was this significant? The prime factors of the third term, 8, were 2, 2 and 2, and these numbers summed to the second term, 6. Of course! I had obtained a 6 from the 8, and from the six I could get another 5. Were all the numbers of the sequence reducible to 5's?

SHOOT, LUKE! YOU'RE FADED.

It was a man's voice. I was plunged instantly into a deep slumber. It was as if my body and soul were a pair of dice in Somebody's game. Out of this oblivion I emerged into a hauntingly beautiful valley enveloped wholly in the shadow of the night. All about me the atmosphere danced with myriads of scintillations, brief and tiny, which lent a glow to all things around me. But no stars stippled the sky, and a silence reminiscent of deafness hung over the unworldly terrain. The question of how I had arrived there did not occur to me, but I felt strangely endowed with a sketchy understanding of where I was going. Ahead of me on the road stood a legended, mossily filigreed waymarker. Its panel and post appeared to have been carved in one piece from a tree which had once grown there. As I approached it in the rather minimal light, I could discern these words: "The Metamathemagician of Dream Valley," and an arrow pointing the way. I crossed a little bamboo bridge. In the pool below, a golden fin severed the surface transiently, then vanished among the wide, flat lilies and the long, thin reeds. I could distinguish the shapes of colossal sycamores. Great ivied walls, too, I saw—and magnolias were everywhere. Cinnamon petals tumbled gently on the softly sparkling air, but my attention was on a pillared portal and the light flowing through the open entrance from within.

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Like a programmed being I entered the Edifice of this great Magnolia Estate, and stood within the presence of the Metamathemagician. He was the embodiment of all the oriental cliches I had ever heard, seated, as he was, in Buddha-like posture, with tall candles burning on either side of him. The columns which supported the dome of the palace were carved tangles of dragons which breathed actual fire, but behind the metamathemagician I could see a very different object—a thing of awesome dimensions and which appeared to be of purely functional design. A part of it looked something like the console of a gargantuan computer, though it enigmatically included such features as many-tiered keyboards of organ-like manuals and stops. The white flowers (unrooted, and seemingly with a mobility of their own) that clustered and clung near the instrument or machine—were they lotus blossoms? Their petals resembled the faces of beautiful women.

As I beheld the Metamathemagician of Dream Valley, trusting that some Cosmic Protocol would require me to be silent until spoken to, suddenly he spoke.

"I am Aleph Umpteen Jillion."

"I am deeply honored to meet you, Sir," said I. "I am Xavier Balilinkoff."

"I am a metamathemagician," he continued. "You have recognized the prime roots. What is the next number after 27 whose prime root is five?"

"33," I replied.

"Prove it."

"33 = 3 \times 11. 3 + 11 = 14. 14 = 2 \times 7. 2 + 7 = 9. 9 = 3 \times 3. 3 + 3 = 6. 6 = 2 \times 3. 2 + 3 = 5. Therefore the prime root of 33 is 5. The prime root of 28 is 11; of 29 is 29; of 30 is 7; of 31 is 31; of 32 is 7; and therefore 33 is the next term of the sequence."

"Ah so. The prime roots form a system from which the first four integers are excluded. Every number greater than 4 has a prime root. Every number greater than 4 also has an expansion index. The expansion index is the number of steps by which a given number is removed from its prime root. What is the expansion index of 25?"

"2, Sir."

"Prove it."

"25 = 5 \times 5. 5 + 5 = 10: this is one step. 10 = 2 \times 5. 2 + 5 = 7, which is the prime root of 25: this is two steps. Therefore the expansion index of 25 is 2."

"Correct. The expansion index of a prime number—any prime number—is zero."

He became quiet, and he studied me for a long time before he spoke again:

"The space-time continuum from which you hail—the physical world—is a fallen world; it ails from the prime foundation, and is not wholly real. It seethes with warlike races sewn throughout it on an intergalactic scale. These beings attempt to communicate with others of their kind over vast distances by means of a low form of cunning. Invariably they send prime numbers coded on electromagnetic wavefronts crawling at a snail's-pace to the nearest stars. They have cluttered up the whole lower universe with prime numbers ad nauseam. They are practical and utilitarian dullards who can think of nothing else. Unknown to them are the beautiful prime roots which only the contemplative mind is likely to recognize.
to recognize. The operation of addition is alien to prime numbers, which are defined by multiplication. Strange and wonderful phenomena follow from the addition of primes—phenomena that will never be known to the violent and faithless denizens that infest the nether world, for they are ultimately intent not on truth nor on beauty, but on that which applies to the arts and crafts of war. What is the function \( Y(P) \) giving the number of numbers less than \( N \) whose prime root is \( P \)?

"I do not know, Sir," I replied.

"Give a theoretical estimate."

"I cannot, Sir."

"Prove that the odd numbers of prime root 5 have a statistical distribution among the integers equivalent to that of the prime numbers (but with wilder fluctuations), and that the even numbers of prime root 5 have a statistical distribution among the integers equivalent to that of the doubles of the primes."

"I cannot, Sir—I am sorry."

"Prove that the sequence of numbers having 7 as prime root: 7, 10, 12, 21, 25, 30, 32, 35, 36, 38, etc., has a statistical distribution among the integers equivalent to the statistical distribution among the integers of the numbers 6, 10, 12, 22, 28, 34, etc., whose expansion index is unity."

"I still can't, Sir," I replied regretfully.

He was disappointed. When he spoke again, it was less to me than to himself.

"If we cannot learn, we can teach." He faded from my sight.

I found myself shifted—miraculously, mysteriously—out of the imposing expanse of the internal environment where I had been received, into a comparatively snug room of inexpressible splendor. Sitting before me, on a day-bed or couch, was a young woman, supremely feminine, with long black hair, and a silver band around her head denoting authority, who smiled up at me with eyes whose beauty was a sea of piranhas to the hordes of lemmings of my soul. I had only time to divine that she was my teacher, when

THE PRINCESS SPOKE TO ME

Sink upon this violet silk.
You, my love, have come to me.
Drink your honey and your milk,
And tell me what you see.

Let the lamps burn lower still.
Show the darkest tapestry.
Contemplate the thing you will,
And tell me what you see.

Now the music softly plays
While your eyes so rest on me,
And as you linger out your gaze,
Tell me what you see.

She held my hand in hers; her gaze was a long, ecstatic dialogue, and her eyes were a brown study of the meaning of present bliss and future blues—until she spoke anew.

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"Let us talk as if we had tomorrow to finish what we have begun to say. Thus we can best begin our work. Prime roots are too difficult for you at present. It does not matter—we will try something easier. Do not be disappointed; in the Child’s Garden of Numbers, ‘Full many a flower is born to blush unseen / And waste its sweetness on the desert air.’ I will use this unique opportunity to teach you about Origins and Terminals."

I concentrated my full attention upon her instruction, until all thoughts of Origins and Terminals, in whatever sense, became one with the poignancy of her beauty—down deep in some secret, smitten place that only such thoughts knew.

Every set of prime numbers (the set is understood to have at least two members) has a sum, and it has a product. Let the product of any such set be $P$, and let the sum be $S$. What can we do with $P$ and $S$? We can write $P + S$, and we can write $P - S$.

An integer may be equal to $P + S$. For example

$$26 = (2 \times 3 \times 5) + (2 + 3 + 5)$$

and an integer may be equal to $P - S$. For example

$$26 = (2 \times 3 \times 3) - (2 + 2 + 3 + 3)$$

The number 26 is both $P + S$ and $P - S$. Another example of such a number is 8.

Some numbers are neither of the form $P + S$ nor of the form $P - S$, such as 4 and 12.

Some numbers are $P + S$ but not $P - S$, such as 14 and 24.

Some numbers are $P - S$ but not $P + S$, such as 9 and 10.

Attend, now, to the negative cases:

A number which does not equal $P - S$, we call an upper origin. By definition, such a number cannot be constructed by subtracting the sum of any set of primes from the product of that same set of primes. An example is 256, which does not equal $P - S$. That is, there is no number larger than 256 which, when diminished by the sum of its prime factors, equals 256. Why is it called an upper origin? The meaning will become clear by example better than by definition. 256 is an upper origin of 23, and 23 is the lower terminal of 256, because:

$$256 = (2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2) + 2 + 2 - 2 + 2 = 240.$$  
$$240 = (2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 + 2 + 2 - 2 + 2 = 240.$$  
$$224 = (2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2) - (2 + 2 + 2 + 2 + 2 + 2 + 2 + 2) = 224.$$  
$$224 = (2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2) - (2 + 2 + 2 + 2 + 2 + 2 + 2 + 2) = 207.$$  
$$207 = (3 \times 3 \times 23) - (3 + 3 + 23) = 178.$$  
$$178 = (2 \times 30) - (2 + 30) = 87.$$  
$$87 = (3 \times 29) - (3 + 29) = 55.$$
55 = (5 × 11)
(5 × 11) − (5 + 11) = 39.

39 = (3 × 13)
(3 × 13) − (3 + 13) = 23.

23 is the prime number to which (by this process) 256 has descended. Therefore 23 is the lower terminal of 256. Conversely, 256 is an upper origin of 23. There are eleven other upper origins of 23, but 256 is the largest.

Next, consider a number which does not equal P + S, such as 4. 4 is a lower origin of 23, and 23 is the upper terminal of 4, because:

4 = (2 × 2)
(2 × 2) + (2 + 2) = 8.

14 = (2 × 7)
(2 × 7) + (2 + 7) = 23.

23 is the prime number to which (by this process) 4 has ascended. Therefore, 23 is the upper terminal of 4. Conversely, 4 is a lower origin of 23. There is one other lower origin of 23, but 4 is the smallest. We can now draw the branches and roots of the tree of 23, circling its upper and lower origins:
The prime number 23 is of the form $24N - 1$. All primes, exclusive of 2 and 3, are of one of the eight forms:

\[
\begin{align*}
24N - 1 & \\
24N - 5 & \\
24N - 7 & \\
24N - 11 &
\end{align*}
\]

You have the following tasks:

1) Prove that one half of all composite numbers have upper terminals of the form $24N - 1$; or that the probability that a composite number has for its upper terminal a prime of this form equals $\frac{1}{2}$.

2) Prove that one half of all composite numbers have lower terminals of the form $24N - 1$; or that the probability that a composite number has for its lower terminal a prime of this form equals $\frac{1}{2}$.

3) Prove that all prime numbers of the form $24N - 1$ are of the form $P + S$, as well as of the form $P - S$.

4) Find the trees of the first few primes of the form $24N - 1$ (after 23, they are 47, 71, 167, 191, 239, 263, etc.), their roots and branches, and enumerate their upper and lower origins.

5) Prove that the number of upper origins of any prime of the form $24N - 1$ is a multiple of twelve. Find the formula giving the number of upper origins and the number of lower origins of primes of this form.

6) Some primes (frequently those of the form $24N - 11$, as in the instances of 13 and 61) are neither of the form $P + S$, nor of the form $P - S$. Such primes are considered to be their own upper origins, as well as their own lower origins. Prove that no prime of the form $24N - 11$ is both of the form $P + S$ and of the form $P - S$.

7) Find the formula giving the length of the chains (in number of steps) leading to the largest upper origin and the smallest lower origin, from any prime of the form $24N - 1$.

8) Prove that all prime numbers have upper origins, and that no chains leading upward from lower terminals have infinite numbers of steps. Prove that primes of the form $24N - 1$ have the longest chains leading to their origins.

9) Prove that all composite numbers have terminals, and that no chains leading upward from lower origins have infinite numbers of steps.

10) Prove that all double origins (composite numbers which are neither of the form $P + S$, nor of the form $P - S$) have certain properties which serve for their non-tentative identification. Prove that $2/3$ of them are either powers of integers or factorable into a power of two and an odd prime.

She moved the pen and paper aside, concluding the lesson.

"We have a little while to be with each other," she said. Together we walked out of the palace, out of the courtyard, into the hills of the night that ascended forever. I did not tell her that I had no idea how I could ever carry out the assignment that she had given me. Wordlessly was her knowledge that I would try. Wordlessly the moon rose like a huge refulgent trillium over the horizon. Silently a
tremendous trillium ascended flooding the blackness with moonlight over the horizon. Wordless was the ecstasy of being near her. Wordless, too, was the foreknowledge of our parting. Wordlessly the swallows swooped and dipped through the pale glow that flowed from the unfolding Cosmic Lily. All was inarticulate. All was silent. Yet the moments unfolded as do the phrases of Heavenly Music, cumulative, fore-ordained, wordless. Mutely I learned that all was not mathematics. Wordlessly she taught me, no less, that all was not music. Yet, in its plenary meaning, that Ultimate Hush was itself a Word which transcended all imaginable mere words. O speak softly, my memory, of that Hush so unspeakably Divine! That wordless Word—that Unutterance uttered by

**LOVE, THE DESTROYER**

Now the canyons resounded with silence,
   And the forest reflected the night.
And a star (too remote!) sped a shy lance,
   Its dimness our pathway to light;
It was time when our life had no purpose,
   And the Cosmos was empty and vain,
And the sun flickered out, and usurp us
   Did the night and the moon and the rain.
I recall you beguiled me to smile once,
For your heart was a rose in the blight.
When the canyons resounded with silence
   And the forest reflected the night

Now your eyes with the stillness communed on,
   And to musicless Heaven arose:
Now the strains that your ears were attuned on
   Only come when Love's music must close;
And you took me by hand into highlands
   Of wanhope, and taught me my plight,
When the canyons resounded with silence
   And the forest reflected the night;
When, as wan as the dogwood in moon-dawn,
   You blushed color no clay could disclose,
And your eyes with the stillness communed on
   And to musicless Heaven arose

When I awoke in the morning, the fire in the old cast-iron stove was quite low and needed prompt attention. Cold morning sunlight streamed in the eastern window. I could hear the wind, and I knew the snows were drifting. I got up, refueled the stove, and scrambled back into bed to review the events of the night while the cabin warmed. How passing strange my study of oneiromancies had proved to be! What had I “divined” by means of dreams that now made my original expectations seem so dead and trivial? What Realm of Being had I entered as a visitor, and why was I admitted? What had Aleph Umpteen Jillion hoped to learn, and were his questions queries or tests? Who was the infinitely beautiful

**WORD WAYS**
Princess who had introduced me to the Child's Garden of Numbers, and why had she adjured me to strive with the Origins and Terminals while at the same time engulfing me in emotions so oceanically great that I was made less than the dust by my severance from her? Would I ever know her name? I resolved to discontinue any further experiments in oneiromancy, since romancing was obviously a part of it; and just one such astoundingly psychic, emotional cliff-hanger had proven too steep and thorny for one Xavier Ballinkinoff of thirteen summers merely.

Having settled this matter in my own mind, I dressed and breakfasted on hotcakes. The snow and wind were still having at it, but my thoughts were fully occupied with my dream of the night before which had ended so traumatically that I divorced myself from any wish for further such experiences.

Why did Aleph Umteen Jillion, the metamathemagician, not inform me more in depth about all that was happening? Had not that worthy treated me in too cavalier a fashion by neglecting to do so? My Princess and Teacher—was I obliged to conclude simply that she "passeth all understanding?" Was there not some deep dark possibility that I might yet learn her name?

I became curious about the books in the cabin. There was one odd volume entitled, "Petite Personality Profiles of the Numbers from Zero to One Thousand," that seemed to have been compiled by a mind so abysmally twisted that it reveled in mingling the recondite and the ridiculous without reserve. Lo and behold how it started:

0. The identity element for addition.
1. The identity element for multiplication.
2. The only even prime number.
3. The only number equal to the sum of all the preceding numbers.
4. The only number equal to the sum of its prime factors.
5. The number of points on a star.
6. The smallest perfect number.
7. The lucky number.
8. The past tense of eat.

For the number 24 it gave:
24. This number is unusual in that +1 is its only quadratic residue.

This served to remind me of the ten tasks I had been given, the fourth of which was the only one to which I could apply my elementary knowledge.

I began constructing the tree of 47. I worked all day factoring numbers, adding factors and taking differences, but at the end of the day I still had not determined with certainty what all the upper branches of the tree were. But the number of upper origins for a prime of the form $24N - 1$ was always a multiple of 12, so it seemed unlikely any twigs were left to be found on the tree. Evidently 47 had 36 upper origins and 3 lower origins. (It was clear, too, from the results I had obtained during the day, that the tree of 71 would be much larger.)
Weill: So all this was more elementary than the prime roots! I was, indeed, called upon, then, to master these origins and terminals, and develop their mathematical theory! And how many years of mathematical preparation would I need for that? To one side of my reams of computations, “Petite Personality Profiles” was still lying open, and my roving eye zeroed in on the number 50.

50. The number of states in the country in which no college or university offers a Ph. D. in Number Theory.

Who wrote that book, anyway? There was no mention of the author on the title page. Under some numbers were entered such abstruse tidbits of knowledge as 137. A famous prime: the fine-structure constant of the electromagnetic spectrum.

WORD WAYS
While under others it offered such comparatively feeble crumbs of edification as 23. Skidoo.

Through the window I saw millions of snowflakes still falling. There hadn’t been so much of it in those hills and woods since heck was a pup. The dusk fell, and I felt disinclined to dwell on numbers. I only wanted to know her name. As I sipped, I turned this peculiar problem over and over in my mind. She wrote English and spoke English, so it could be reasonably assumed that her name was representable by a certain number of English vowels and consonants. But how determine that number? Not by logic alone, certainly. Nothing so dead and respectable as that could dent the thing. The starting point would have to be a hunch.

Such a hunch developed slowly, as I washed dishes and stoked the fire for a night of bitter cold. I thought back over the elaborate preparations I had made for what had turned out to be my wild oneiromantical adventure. But the actual inception of the experience proper was heralded by a crude and vulgar expression relating to a gambling game of chance involving two cubes. Yes. The vision was initiated by an epithet: Shoot, Luke! You’re faded. These words had triggered instantaneous deep unconsciousness, after which I had emerged into the mysterious and beautiful Othershere of Dream Valley. It now became so obvious as to be self-evident that 7 and 11 were the all-important numbers for—the veritable key to—my present problem. (Could it have been possible that I had been but one die, and she had been the other?) I listed alphabetically the distinct letters in SHOOT, LUKE! YOU’RE FADED, found they were thirteen in number, and underlined the seventh and eleventh letters as being especially significant (also those between, more lightly, as probably significant).

A D E F H K L O R S T U Y

The letters L O R S T, those numbering from 7 through 11, proved to have an uncanny suggestiveness about them. The terminal letter of the five-letter sequence was T. This in itself suggested Origins and Terminals, and to the simple and straightforward power of this suggestion the other letters obligingly contributed:

O B — — — — 5  T — — — — — L S

A felicitous result! A symmetrical arrangement, appropriately emphasizing the beginning of Origins with the first two letters, and, on the other hand, highlighting the termination of Terminals with the last two.

My elation over this form of inquiry slid too capriciously over into depression as I doused the lamp and retired, but I resolved to examine that pair of words on the morrow in the light of dice throwing and the numbers which dominate that game. In the stove the fire crackled in response to the wind in the chimney, and the firelight, issuing from the vent under the stove door, flickered about the cabin.

To the dance of the firelight, the wind chanted, “What’s in a name? What’s in a name? The name is a part of the Psyche, the Soul.” What else but knowledge of her name could safeguard me against the possibility that I would someday forget Her, forget all about the metamathemagician of Dream Valley—forget the infinitely beautiful Heaven in which She dwelled, and forget—forget forever.
THE DREAM OF LOVE

Nothing is changed. Tonight as I lie in bed
Loud through the woods have the bitter wind's cheeks cracked.
Last night I dreamed so vividly of you
While the wind drove snow through the frigid world of fact.

While the creek froze, you came to me.
While the wind howled dimly some appropriate tune
Around my rudely sheltered head.
You stood against the Sapphic trilliumoon.

Imbued in an oral world of birds and waters
We stood, while our lips drew nigh—we knew not how.
Swallows in the twilight were souvenirs in theory
But a kiss is nothing now.

Ah, when the soul has mastered such a flight.
How painfully slow, unwilling, it leaves the height,
For, with the elemental rawness mixed,
Fantasque and still-born hopes becloud the night.

God send me no other dream that does fulfill.
Awakening will find it unfathomable.
Naught else so wildly mingles Heaven and grief
That magnify each other beyond belief,
Nor lasts when its inspirer is forgot
Because it Indian-gave what life gave not.

Morning came, clear, cold and sunny. I put aside the mathematical computations I had labored over throughout the previous day, and began a systematic examination of the outre society of books that inhabited the cabin. To my surprise, I found one entitled "Onomancy," and subtitled "The Theory and Practice of Divination by Means of the Letters of Names." How convenient! How naive I had been, that I would never have imagined that such a book could even exist! Yet, to my further amazement, the opening chapter was entitled, "On Divining a Name Unknown," and following upon this, I was utterly astounded at the pertinacity of the opening paragraph, and flabbergasted by the germaneness of the opening sentences:

"There have been occasions in which a mortal man has met and fallen in love with an Angel, or Being who lives in a Higher Realm for which we here below are not fit; and, although this love is not necessarily unreciprocated, there may be no disclosure to the mortal of the Name of Her whom he adores. But such an encounter bridging two worlds is never pointless, and, when names are not exchanged, there will always be another pair of words which function in some manner to link the destiny of the flesh-and-blood man to the personality of the world-transcending woman, and from this pair of words it will be possible to learn Her name. The bridging of this world with a world of higher order must

WORD WAYS
necessarily involve some form of order which transcends the spacial and temporal forms of order which characterize this world in the first place (see "Transformation of Consciousness" and "The Consciousness Coordinate"). While we remain in our low estate, as animated clods, we have (fortunately for our souls) recourse to just such an order—the verbal order. It is a part of the diviness of words that they unfailingly carry information, unexpected, unguessed, other than the information of their obvious messages. A word of dire warning is in order, however. For should the seeker learn the beloved Name, he may also, at the same time (as Socrates taught) discover that he had only forgotten it—that he had never at any time really and truly not known it; and, more than this, he may remember—to his sorrow—that he had lost the love of the Heavenly One in another Time and Place which will itself have been forever lost in the innumerable, the fleeting and irrecoverable Cosmic Epochs."

I closed the book. I had read enough. I was not to be deterred.

At the top of a page of paper I wrote

ORIGINS TERMINALS

and, upon arranging their distinct letters in alphabetical order,

A E G I L M N O R S T

I found they were eleven in number. Thus, one of the two numbers centrally important to dice-casting was present at the outset. With what reason and with what justice could the presence of the seven be likewise discerned? Since the N was the seventh letter of the sequence. I underlined it as having special significance. Since G was the seventh letter of the alphabet. I underlined it, too, as being equally significant. Then I dropped two letters from either end of the sequence, leaving only the central seven letters:

G I L M N O R

After I had done this. I had no idea at all what to do next. I went about preparing a beef stew for lunch, feeling very circumspect about the seven letters that I had arrived at. If, by any stretch of the imagination, they had significance, then what influence, by what further stretch of the imagination, could unveil this significance to me? In discouragement I dropped the whole business as being fraught with unreason from the outset.

In the evening, I found in the cabin—of all things—a book on lip-reading, which contained hundreds of instructive photographs showing the lips as they appear from all angles during the pronunciation of all the many different sounds of speech. Consonants were classified and cross-classified in many ways, such as labial, dental, explosive, percussive, gutteral, sibilant, liquid, aspirant, sonant, voiceless, and so on. B, for example, was sort of crisscross-classified as a voiced, percussive, labial consonant. The liquid consonants caught my attention. There were just five of them: L, R, M, N and NG! And something deep in me shouted "Eureka!" For it could only be a marvel of meetness that Her Name should contain all the liquid consonants once each, and no others! The special importance already

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assigned to the N and the G was now explained in the fact that they belonged together! The letters of her name, now augmented to eight, but representing seven speech sounds, were N C I L M N O R.

Onomancy means: divination by means of the letters of a name. Once I supposed this was just a curious word and a curious definition. Alas, but sad experience has made a believer out of me. What qualities had I seen in that Supernal Woman which I may have dared to deem not necessary to any Heavenly virtues, and which may have made her name in a trice familiar to me? She had had something ineffably, exquisitely oriental about her, and lonely. Her name was Minglorn. Somewhere, eternities ago, she had told me so.

But—what was this memory? What this pain? From whence, all silently on sudden feet, came this sweet Certitude of a Name revealed? Was I but a shadow, perhaps, of some once larger self whose footsteps had been infinitudes? And if, in some Larger World my feet had trod, I could have nevertheless been uncharitable, disobliging and small, what destiny was fit for me?

I didn't know. Only the pure, the silent, the indifferent snow, and the lachrymosc, yet ruthless winds of the night were there to witness my

HAIL AND FAREWELL

In the late night, however deep my dreaming,
And though I travel an exotic land,
I find you not in all the shadowed seeming,
I never hear your voice or see you stand.
In vain the lonely quest would these pre-empt,
For in your heart my vision still can see
Not forgiveness, not indifference, not contempt,
But only that you have forgotten me.

When tenderly I view from far away
How once you came to bless my life of dross,
When I recall in horror and dismay
My own creation of my crushing loss,
When swift contrition leaves me flayed and dumb
And stark on memory sears your cold adieu,
Tell me from where the courage of heart shall come
To resign beyond redress my cause of rue.

To you from whom a happiness too high
Swept down into me, secret and unseen,
I trust to the boundless night one late goodbye,
And though I was unworthy, weak and mean,
My heart has not profaned that dispensation
You are eternally the revelation
That once I was acceptable in Heaven.

WORD WAYS