ALICE IN VIRUSLAND

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(My apologies to Lewis Carroll with the hope that he will extend his usual gracious blessing to this latest parody on his immortal "Alice.")

PROLOGUE

Since this particular President has had only eight months in which to ripen instead of the usual twelve, you must expect his remarks to be a little green, possibly even somewhat tart. If they should prove too acid, I beg you to expose them to the warm California sun to supply sugar and a richer flavor. As a matter of fact, I wrote another address, "Immunity in Poliomyelitis," for this occasion, but it was so heavy that the thought of a long day of meetings in the summer followed by a sumptuous dinner decided me to discard the heavier in favor of a lighter medium; so I pray you, please bear with me and be generous. May I add for the benefit of the ignorant ones that my wife's name is also Alice and that she works at times with me in the laboratory. So if on occasion "our Alice" should make a grown-up remark you will realize that she has a multiple personality.

Alice was getting tired of waiting for her father; she was sitting in the one comfortable chair in the laboratory wondering why grown-ups always had to finish things, when suddenly a small monkey jumped out of the cage, dashed by her, and popped down the ventilating shaft. In a flash, down went Alice, trying her best to catch the runaway. Down, down, she went; it seemed like miles. The monkey was always just ahead of her and she

1 Presidential address delivered before the Society of American Bacteriologists at its fortieth annual meeting, San Francisco, August 31, 1938.
could read his name "Ferdinand" on his collar. "I wonder," she thought, "if Ferdinand isn't going back to India to find his mother. Wouldn't that be fun! I should love to see that river they talk so much about, where the people all go to say their prayers. Let me see; is it the Styx or the Jordan? Oh no, I remember, it's the Ganges."

A blurred jumble of thoughts and hours passed as Alice hurtled on through the earth, when suddenly, ke-splash,—down she plopped into deep water. *Such* a douche! *And such* a plunge! But she swam hard, managing to come to the surface at last and to get to the shore just in time to see Ferdinand dash across the beach to the woods. After him raced Alice, only to see him jump into the trees, saying as he went, "Damn his tail and whiskers, I know I shall be late to the tea."

"That reminds me," thought Alice. "It is getting late and I am so hungry." As if they could read her thoughts, the monkeys threw down a shower of bananas from above, and Alice scrambled around picking up several. "Mmmmm, this is delicious!" said Alice, looking about at the foreign scene as she munched the ripe fruit.

"But what a curious feeling! I must be shutting up like a telescope!" She had eaten so heartily that the effect was immediate; by this time she was only three inches high. "I have heard of a bird's-eye-view," said Alice to herself somewhat frightened, "and I surely am getting one now. I do hope there is no cat about. He might be tempted."

She continued to shrink until she found herself looking in a neighborly fashion into the curious eyes of a large black ant who was comfortably puffing away at a briar pipe. "Curiouser and curiouser," thought Alice. "I suppose I am now getting an insect's view of things. I hope no bird will think me suitable for his afternoon tea," remembering with distress the ants she had sometimes trod upon. "I certainly shall watch my step when I get home again."

"How different one does feel when one is small and weak!" said Alice aloud.

"What do you mean,—small and weak?" asked the Ant, in a gruff voice. "Why, the strongest and most sensible creatures I
know are the smallest; just think of bacteria and the filterable viruses!"

Now of course, Alice, being her father's daughter, knew that bacteria and viruses cause many diseases, but she was astonished to hear the Ant discuss them as though they were rational beings. At a loss, she responded with the only polite remark she could think of, "'Go to the ant, thou sluggard; consider his ways and be wise.'"

Whereupon the Ant, with a grin of pleased satisfaction on his bulbous face, removed his pipe and murmured, "'Out of the mouths of babes and sucklings!' Who are you, anyway?"

Alice replied rather shyly, "I—I hardly know, Sir, just at present—at least I know who I was when I got up this morning, but I have changed so much since then—"

"Oh, so you're a changeling!"

Alice did not like this suggestion, so she turned away, absent-mindedly nibbling more of the banana which she still held in her hand. Rapidly she dwindled in size until she was smaller than the smallest grain of sand, and the Ant, her erstwhile neighbor, looked like a great irregular hill.

Viewing a world entirely new to her eyes, she was amazed by the minute, crawling, wriggling and tumbling creatures every-
where. The commotion around her, and the bumping of all the colloidal particles together caused loud crashing noises, so that she was terribly frightened and almost stunned by the roar. She managed, however, to find a small sand grain with jagged margins, so that with much effort, she pulled herself up out of the little damp spot where all these creatures were racing to and fro. She now began to look about her with more precision, and discovered out on the drier sand, away from the commotion at her feet, two strange creatures doing a peculiar dance. “What can they be?” she said aloud.

To her surprise, a rod-shaped creature with a large head, standing on the back part of her grain of sand answered, “What can be your name, and where do you come from, that you do not know two of the most powerful clans of our race?”

“Listen,” said the Tetanus Bacillus, without waiting for Alice to answer, “and you shall hear what is troubling them.”

THE COCCUS AND THE SPIROCHAETE

The Coccus and the Spirochaete
Were walking down the strand.
They choked upon a starfish;
“We simply cannot stand
Such large and clumsy proteins
Who think they are so grand.”

“If trypsin strong could aid us now
By splitting him in twain,
Do you suppose,” the Coccus said,
“T’would give us awful pain?”
“I doubt it,” said the Spirochaete,
“There’s too much tryptophane.”

“The time has come,” the Coccus said,
“To talk of many things,
Of stools and stains and stigmata
Of guinea pigs and goats.
And why the neutron has no charge
And whether iron floats.”

Forward came the anaerobes
Moving in stately dance,
While spirochaetes on every hand
Wriggled a lively prance.
And all the little “viri” stood
Arrayed in purple pants.
"But wait a bit," the Coccus cried,
Deciphering his notes,
"This human race is surely mad
They slit each other's throats.
They blow each other off the earth.
They sink each other's boats."

"Should we permit," the Coccus asked,
"These silly beasts to thrive,
Who call themselves the lords of earth
Yet selfishly connive
Freedom, dignity and peace
From many lands to drive?"

Spake Influenza Virus then,
"Let's smite them hip and thigh,
They're clever, strong, and hard to beat,
But smack them in the eye.
If we combine in our attack,
Surely they must die."

THE COCCUS AND THE SPiroCHAETE Essayed A STATELY DANCE
"Whatever do they mean?" said Alice.

"Oh, they have called the Microbe Parliament together to consider what to do with 'man.' Come to the meeting with me this evening and you shall hear. Representatives from all the clans will be there."

"Will the king and queen be there?" asked Alice timidly.

"We deal not with dictators or kings," said Clostridium. "We be free people; free to gather, free to come and go, free to live our own lives without decrees from others."

As dusk came on, Alice and the Clostridium walked along, hand in hand, until they came with countless other strange beings to a great cave in the rock, with the roof seemingly supported by rows of stalagmites joining the stalactites from above. As they entered, Alice noticed that masses of small rods were gathered around each column and that each of these rods glowed from within with a pale greenish light, so that the whole cavern was beautifully illumined, with the rays reflected from every crystal.

"How very beautiful!" said Alice. "But these strange creatures! It is quite unbelievable!—Why, some of them look like parallelopipedons with peculiar arms and legs sticking out at all the corners! Are they all alive?"

"Alive?" said the tetanus bacillus. "Oh, we smallest folk never make that inaccurate distinction between life and death which you Gargantuans consider so important. Everything is alive. To be sure, there are different degrees of reactivity and of the excited states."

"Now, over there on the extreme left are some of the markedly excited clans. You call them radio-active substances. A little nearer us are the vitamins; only, of course, we don't give them your peculiar alphabetical names. Let me see, you have about fifty-seven different varieties, haven't you? There is Nicotinic Acid. See him, standing up on his nitrogen, waving his carboxyl tentacle. In front of the vitamins are,—what do you call them?—oh yes,—the hormones. Potent creatures! That clumsy fellow is Testosterone and just beside him is one of the chief causes of cancer. When your pathologists stop quarreling about
the origin of this and that malignant cell, and dig harder at the physiology of the cell, they'll get somewhere. But don't let them get so excited over what is animate and what is inanimate.² Take my word for it, that notion will go the way of the Ptolemaic Theory of the Universe."

"Oh," said Alice, in a very subdued voice.

"The only distinction we attempt to make is to keep the smaller, more active ones over here on the left where they won't disturb the more conservative clans, like my own over here on the right. See that trouble-maker sneaking over to the right; that's a haptene looking for a protein to give it a reputation. And do you see that most peculiar fellow way over at the extreme left, beyond the radio-active substances?"

"Yes", said Alice, "Why, it looks like a constantly changing interrogation point with a lot of funny arms sticking out everywhere. What is it?—or,—or, should I say, who is it?"

"Well," said Tetani, "that is man's best friend or his worst enemy, depending on your point of view. That is the virus of 'Satiable Curtiosity';—he doesn't stay around here very much, he really prefers the company of you Gargantuans."

Alice was almost overcome by the overwhelming scene, but Clostridium said they must hurry to their places as the meeting was about to begin. Straight up the central aisle to a rocky platform at one end, they marched, the Tetanus Bacillus leading the reluctant Alice by the hand. He seated her on a rose quartz crystal on the right of the stage.

In the center, seated on a large sapphire, was a peculiar-looking horseshoe-shaped animal which Alice recognized from her seashore experiences as that curious relic of past ages, the king crab. Her guide explained to Alice that Limulus was retained as chairman and judge of their proceedings because of his long line of illustrious ancestors and his real blue blood. "His family is almost as old as mine," said Tetani proudly.

Alice was speechless at the weird scene. Out on the floor of the cave was a great log jam of the strangest creatures. Opposite

² This idea is well presented by N. W. Pirie in an essay published in Perspectives in Biochemistry (1938) edited by Needham and Green.
her in an enclosure on the platform were twelve solemn-looking microbes, good and true, that appeared to be samples of the mass out on the floor.

"Most peculiar faces," muttered Alice. "That strangest moon-faced one with long whiskers must be the Jabberwock."

"Not at all," said Tetani, deeply offended. "That is Giardia lamblia, one of the wisest members of the jury."

"Silence in the court!" shouted the Anthrax Bacillus, standing up beside Limulus.

"Read the accusations," said Judge Limulus. Whereupon, the Streptococcus unrolled a parchment scroll on which were inscribed the itemized accusations against mankind:

"Through the skill of a clever member of the Bandar-log, we have with us this evening, a representative of the human race!" Pointing to Alice, he shouted, "She must answer to the charges!"

Alice buried her face in her hands, while the Coccus proceeded to list the accusations, most of which fell on her dazed mind as on deaf ears. She did, however, arouse herself sufficiently to hear the last few words as he summed up his appalling denunciation:

"Brutality and blind-spots.
Power to the panderers and the paranoids.
Blind selfishness and blundering sentimentality!"

"Would you believe it," said the Coccus, "they build great structures for the care and preservation of the feeble-minded and permit these poorest strains to reproduce their kind!"

Alice continued to sit with buried face while the judge called for the evidence.

"For my part," said the Influenza Virus, "man seems too weak to worry about. With the help of members of some of our other clans, I destroyed millions of them a few years ago and I can do it again any time. War and resulting famine are our greatest aids, and their demagogic leaders easily inflame them to war. We have nothing to worry about. Man is foredoomed to destruction by his own folly."

"I am not so sure," said Corynebacterium diphtheriae. "My
family used to enjoy excellent accommodations in the throats of man, but recently, because of some vaccination procedure they have developed, we find it almost impossible to gain a throathold. Then, too, they heat their milk to such a temperature that our progeny are destroyed. It is a 'recession' at least for us, although we may be able to meet it temporarily by 'inflation' while developing more virulent strains."

Eberthella typhi urged immediate action. "They heat their milk, they put some killing stuff in their water, and they have developed some way of destroying us inside their bodies. Why, in some cities, our immediate family no longer appears on their ledgers."

"Off with her head! Off with her head!" came the cry.

"And the bacteriophage will git you if you don’t watch out" shouted somebody in the audience.

Spoke up the Streptococcus again, "I had intended to keep my people out of this discussion, because we have always been so powerful, but I am here to say that recently, man has devised a
cunning minute torpedo which 'gets' many of us. We do not feel so completely sure of ourselves as in former years. Maybe man is more capable than we used to think."

Treponema pallidum joined in. "Of course, you understand that for obvious reasons we have always had the inside track, but man has been sending stronger and stronger torpedoes after my relatives in recent years. If human beings really put their minds to it, I believe they could come pretty close to wiping out many of our more highly-specialized microbe families."

A chant arose from a portion of the audience:

"Wriggle, wriggle, Spirochaete,
How they wonder what you eat,
Down the vessels as you go
Bringing humans pain and woe.
Perhaps you favor glucose sweet
Or carotene you'd rather meet?
But watch your step, when histamine
Gives place to strong arsenamine."

The next witness was the Tubercle Bacillus who said that his people, too, were hard put to it, and were unable to maintain themselves in the luxury their ancestors were accustomed to. "I second the motion of the Streptococcus that we all combine to eliminate mankind."

Cheers from the audience and more cries of "Off with her head!"

Polioymelitis virus spoke up, "That's all very well for you common laborers with no specialized training. But what would happen to my family if man should be eliminated? We should be wiped out, too. We live through man alone. It strikes me that you began this meeting on a very lofty plane—man should be eliminated for the welfare of the universe, because he is so stupid and immoral,—but what you really want is to save your own jobs and your own skins, just like all the politicians. As a matter of fact, Mycobacterium tuberculosis hominis and several others that have spoken would be in a bad way if man were eliminated. You are all just as selfish and short-sighted as is man. If you would
but learn to adapt yourselves to man's physiology, as we have almost succeeded in doing, and not destroy him, he would not develop means of eliminating you. He is not such a bad fellow if you know him as I do. I hold no brief for members of the human race. Of course, they are weak and selfish and gullible; like us, they are controlled by their emotions instead of their brains. Occasionally even some of their scientists drift over into mysticism and the metaphysical, and such a mess they make of it."

Chorus from the jury box:

"Oh let us never, never doubt
What nobody is sure about!"

"Off with her head!" shouted some.
"Let her explain! Let her explain!" yelled others.
"She can't explain anything," bellowed the Judge, pounding the table for order. "I suggest that you consult the shades of some of the humans that have had sense enough to study us. They must surely be the wisest. Suppose two or three of you take Alice over to the Styx and see what some of those old fellows think of their species by now and what they think of your plan. There is one old codger who sits all day in the sun squinting through a little hand magnifying glass and another long, skinny, bearded fellow, a recent arrival, who looks through a big binocular microscope. See what they have to say."

Such an uproar broke out at this suggestion! Each microbe in the assembly tried to address the chair at once. "Just like the legislature!" thought Alice.

During the commotion, two of the least excited jurors came over, took Alice by the hand, and shuffled hastily out the back way, followed by the faithful Clostridium tetani. Outside, all four of them climbed on the back of an enormous fruit fly (Drosophila) who, at the word, sailed off across country with them.

Alice heaved a sigh of relief to be free from the commotion of the trial, even though she knew nothing of her present destina-

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* H. Belloc, 1925, J. Path. & Bact. 28, IV.
* Antony van Leeuwenhoek.
* Theobald Smith.
tion save what the Judge had suggested. Never had she been so insulted and dragged about.

As they "whiffled" madly on "through the tulgey wood," she began to get her breath and to look about her.

Her two new neighbors were not at all reassuring. One looked much like her chief accuser, the Streptococcus, save that he had on a thick fluffy overcoat of the smoothest material; he sat up very straight and severe as if he were much impressed with his own importance. "He is a Type III Pneumococcus and very powerful," whispered Alice's mentor, Tetani. The other crea-

![Alice's First Meeting with a "Virus"](#)

ture, Alice recognized as the Influenza Virus that had spoken so slightingly of the human race. He was a forbidding monster.

Four rows of talons lay beneath
Full twenty pair of canine teeth,
His fork'ed tail stuck out behind
With horny scales of every kind.
His eyes were red and white and green,
Changing with the shifting scene.
His nether limbs? You look askance!
Were covered still with purple pants.
"He is so ugly that he is really quite attractive," said Alice to herself, "but I should hate to get near him. With all those tentacles, he could seize dozens of me at once."

The Fly now landed them gently near a great river with many boats moored along the bank, and others going back and forth from shore to shore. "This must be the Styx," thought Alice. "Yes, it is, because on the deck of that nearest boat are the two old men the Judge was describing."

"Come," said Tetani, and together they climbed down a convenient spider web on to a pile of milkweed down. The Pneumococcus told Alice that she must interview a number of these scientists as the Judge had suggested. "You will drink some of the milk from this plant and that will make you grow to your normal size. The Tetanus Bacillus and I will be in your right and left ears respectively to tell you what to say and the Influenza Virus will be in your nose to bite you if you do not say the right thing."

Alice drank deeply of the milkweed juice and immediately began to grow in every direction. The Fly no longer seemed such
a huge creature, and soon she was looking down on ants and violets as on other days, before she chased the monkey down the ventilating shaft. Her vision, however, seemed much more acute than formerly.

"Ouch!" said Alice, as she felt a sharp nip in her nose, and heard a voice in her left ear bidding her go aboard the houseboat.

There she found the older man with a silvery wig, excitedly looking at something the tall, lean, bewhiskered fellow was demonstrating through his big binocular microscope.

"Marvelous! Wonderful! You are right! Just like the picture in this book!"

"I must say to you, as I've oft-times said already, that 'tis not my intention to stick stubbornly to my opinions, but as soon as people urge against them any reasonable objections, whereof I can form a just idea, I'll give mine up, and go over to the other side; and especially because my efforts are ever striving towards no other end than, as far as in me lieth, to set the Truth before my eyes, to embrace it, and to lay out to good account the small Talent I've received; in order to draw the World away from its Old-Heathenish superstition, to go over to the Truth, and to cleave unto it."

"Yes, I see every coil, and you call that a spirochaete? But what a beautiful instrument of precision your microscope is! My little hand lens which I thought so fine is but a toy compared with this. But I did use my one talent. Tell me, has man improved himself as much as he has his optical instruments?"

"I fear not," said the slender one.

"The human race is in a rather delicate, unstable relation to its environment. Its course is frequently left to chance, in the hands of incompetents, instead of being guided by the cooperation of those best equipped. Only now and then is the voice of reason heard in the rare intervals when the human din subsides long enough for the race to catch its breath. The value of human life is profoundly distorted, and the untiring labor de-

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voted to attempts to save a single life is daily and hourly flouted on the highways. Important devices to protect community health, such as vaccination against small pox, are set aside because the accidental individual death rate resulting from their application may be in the second or third decimal place of a per cent."

"Hmmm" whispered the Influenza Virus to the Pneumococcus. "He isn't overly enthusiastic about his human race, is he?"

"No," said the Coccus, "but they do make marvelous instruments and they write down their thoughts in books for all, who wish, to enjoy, even centuries later."

The Virus tweaked Alice's nose and suggested that she see who might be at the other end of the boat. Near the bow, Alice found a hawk-nosed, keen-eyed genial German Physiologist, Carl Ludwig, and a kindly, well-bearded old gentleman, a brother physiologist from Russia, Pavlov, poring over the description and the results obtained with the latest ultracentrifuge. "Grossartig—kolossal—ein Baustein!" cried Ludwig. "Die Methode ist alles! Die Methode ist alles!"

"Yes, yes!" said Pavlov, "but consider the centuries in which this instrument was being developed." Turning to Alice, he said, "I beg you, bear this message to the scientists of your country—'Gradualness, gradualness, and gradualness. From the beginning of your work, school yourselves to severe gradualness in the accumulation of knowledge. Learn the ABC of science before you try to ascend to its summit. Never begin the subsequent without mastering the preceding. Never attempt to screen an insufficiency of knowledge even by the most audacious surmise and hypothesis. Howsoever this soap-bubble will rejoice your eyes by its play, it will inevitably burst and you will have nothing except shame."

2 "Die Methode ist alles" was a favorite thesis of Ludwig.
3 A part of Pavlov's Testament to the youth of his country written just before his death, 1936.
Much impressed, the Coccus remarked to the Influenza Virus, “These Gargantuans with their written language, the high ideals of their philosophers and scientists, and their printed books, must surely be more effective than we can ever hope to be. They should be able to inspire and teach everybody.”

“Humph!” said Influenza Virus. “Did not the ‘lean one’ say that their leaders were frequently incompetent? We can divide and multiply, can’t we?”

“Yes, but we have no enterprise, no memories of the past, no record of the achievements of great individuals of power and spirit to stimulate the whole race.”

“We can work the more effectively,” grunted the Virus.

Said the Coccus, “We can accomplish great tasks, but we are not individuals; we are merely masses. We do not even know our own parents.”

“Pooh,” said the Virus. “Do you see those two men over on the next boat? Well, that fellow with the van Dyke beard is the greatest poet and seer of them all; he states of mankind that ‘It is a wise father that knows his own child.’ And a keen woman essayist from Philadelphia, Agnes Repplier, puts it even more sharply when she says that ‘maternity is a matter of fact, while paternity is a matter of conjecture.’ Even Landsteiner’s contributions and skill merely narrow the limits of the conjecture.”

Alice interrupted the dispute by saying, “I recognize Shakespeare, but who is the other man with the large nose, the shining eyes, and the thin face? He is almost surrounded with books. Did he write all of them?”

“Yes,” said the Coccus, “that is Erasmus, the apostle of the ‘book,’ of fair-mindedness, of conciliation, and the master satirist and enemy of war and of fanaticism. He lost the struggle in his own period and he certainly would lose it today. But he knew that ‘Fanaticism is fated to overreach its own powers. Reason is eternal and patient, and can afford to bide its time.’

But the leaven of reason must permeate the whole people in order to be effective.”

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At that moment, a great bell sounded. Pavlov put down his book saying it was tea-time, and would Alice be so kind as to be their guest; Alice accepted with alacrity. Leisurely they sauntered along, other shades joining the group from each of the houseboats, all making their way to a large central building.

As they went inside, Alice was delighted to see Ferdinand, the monkey, seated at one of the tables. She darted over, and slid into the chair next to him. "So you aren't going to be late to the tea," said Alice.

"Oh, that was yesterday," said the monkey, "this is tomorrow."

"At any rate," said Alice, "apparently we have jam this week," as she took a huge slice of bread and butter spread thickly with strawberry preserves. While munching this, she looked about her with amazement. At one end of the table was Puck, and at the other, the Mad Hatter. All of her recent acquaintances were there, and across the table was Pasteur dilating to Lord Lister on the value of laboratories to the human race, and right next to Lister were Tweedle Dum and Tweedle Dee.

On her right, Erasmus and the Unknown Soldier were discussing methods of preventing war. Said Erasmus\(^1\), "One war springeth of another.... There is agreement among poisonous serpents. But unto man, there is no wild or cruel beast more hurtful than man.... Moreover, when the brute beasts fight, war is one for one, yea and that very short.... When was it ever heard that an hundred thousand brute beasts were slain at one time fighting and tearing one another?.... Now if man will weigh, as if it were in a pair of balances, the commodities of war on the one side and the incommodities on the other side, he shall find that an unjust peace is far better than righteous war. In war, the most part of the punishment and harm falls upon them that least deserve to be punished, that is, upon husbandmen, old men, honest wives and young children. There is no tongue can tell the harm and mischief that we feel in war." The Unknown Soldier gravely nodded his head in complete assent, then said that he had written a few verses that expressed his hopes and dreams.

\(^1\) Erasmus, "Against War."
THE DREAM OF THE UNKNOWN SOLDIER

The filth and squalor, the lice, the stench,
The shrieking of shells, death in the trench,
To me are but memories far in the past.
Would that the World War had been the last!
A dream have I for the "brave new world"
Of beauty and truth, with war banners furled.

Sweet grapes, fresh milk, hot bread and roast meat,
Soft wind on cheek, damp grass on bare feet,
Sunset and skies, deep woods and swift brooks,
Friends and kind words, music and books,
Work and fatigue, achievement with zest,
Home after storm, and well-earned rest.

Ample for all, and none with too much,
With leisure for painting, 'cello, and such.
No excess of power, no surfeit of wealth,
"No one is free who rules not himself." 1
Full scope for each, both humble and brave
With teachers of spirit from cradle to grave.

This free-will choice, each man must make
'Twixt growth of self, and selfish sake.
Beauty is near for all to enjoy,
But truth lies hidden in hard alloy.
Humane ideals, not lust for power
Must rule, if the World would truly flower.

"I'm afraid I don't quite understand," said Alice timidly.
Neither did Ferdinand for he grabbed two bananas from the table and darted for the door. Alice made after him, intending not to let him get away from her this time. But she stubbed her toe on the doorsill and felt herself falling, falling, not to the floor, but into her father's arms.

"It is time to wake up, Alice," said her father. "You have had quite a nap."

"Oh—where's Ferdinand,—where's the monkey?" said Alice, rubbing her eyes. "I've had the strangest dream, all about viruses and people and everything. I must tell you all about it."

"Well, it is time to go home to supper now, and then you may continue your dreams. For tomorrow we start bright and early

1 Epictetus.
for the unscanned western mountains, and the distant Golden Gate.—Do you think we shall get there?”

“Of course,” said Alice dreamily. “But it will take a long time.”

“Yes,” said her father. “It will take many centuries.”

**EPilogue**

“He who remembers what man is, can be discontented at nothing which happens.”13

13 Epictetus. This epilogue is thought to be in harmony with the philosophy of the paper but not with the spirit of the Annual Banquet, so it was not read at the meetings.