PHILIP BALL

THE SUN AND MOON CORRUPTED

A NOVEL

'BALL KEEPS YOU READING'
DAILY TELEGRAPH

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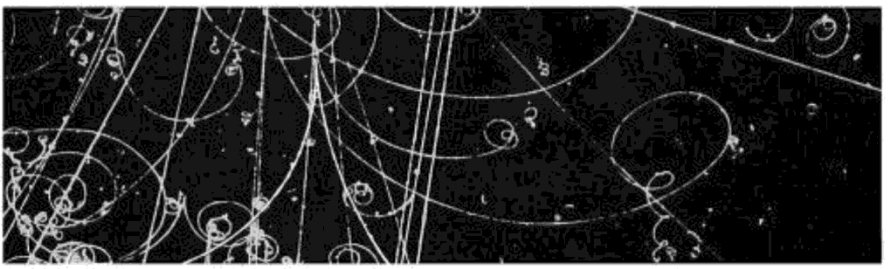
THE SUN AND MOON CORRUPTED



Philip Ball

Portobello BOOKS

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THE CITY

And the city had no need of the sun, neither of the moon, to shine in it.

Revelation 21:23

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1

MANY PEOPLE HAD OPENED THEIR WINDOWS BEFORE THEY left the city, because the days had become rather warm and they had wanted to let in some air. They had laid out laundry on the balconies of high-rise blocks, and the bright colours gave the streets below a carnival appearance, as though bedecked for a celebration of spring. But already the dyes were burning, breaking up, and fading, the brightest and cheapest first, in the sun's strong glare. No one had intended to leave their washing out for so long.

The arrival of spring was indeed a cause for celebration here. It was the most congenial time of year, a brief respite between harsh extremes. And so there was always a parade on Labour Day, and the post office had been decorated in anticipation; on its glass front was taped a big yellow sun. In the backs of shops and offices banners had been prepared, and flags and drapery to hang from the cars and trucks.

In a blockhouse kindergarten, Lena found a neat row of little shoes on the window ledge, each pair with a name painted or embroidered on the inside. They looked as though they belonged in a fairy tale, all awaiting the enchanted feet of elves. Or maybe this was the lair of a witch who had baked the children in an oven and eaten them with plums and almonds.

The city was not as quiet as a city should be when all its inhabitants have gone away. There was always a helicopter droning above with insectoid persistence. The coughs of distant engines starting up were a substitute for the barking of dogs. Occasionally a siren came whining down the wide streets in imitation of marsh birds. Human noises, already turning into the sounds of the wild. Lena sensed green shoots flexing under the concrete, anticipating new opportunities in the world above. Don't get your hopes up, she advised them.

This place has a fever, she thought, without quite understanding what she meant by it. The buildings were

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streaked with sweat. Pipes oozed dark and viscid substances. House plants hung limp and feeble. But the fever reached further than any of this. It was in the world. It was in the sun, swollen to an unnatural size, like a moon as it rises low on the horizon.

In one of the stark, unkempt squares she found a naked man on his knees, grappling with iron flames that writhed and roared between his hands. It was easy enough to guess who this was, even before she deciphered the plaque: Prometheus, with living fire in his grasp. Of course, she nodded – this is where you live.

It seemed obvious now to Lena that the empty city had always been her destination. A long road between grim tenements and craggy mountains, across plains and forests and rivers, and all the while this bleached and silent place waited at the end.

It was here that she believed she would at last find Karl Neder.

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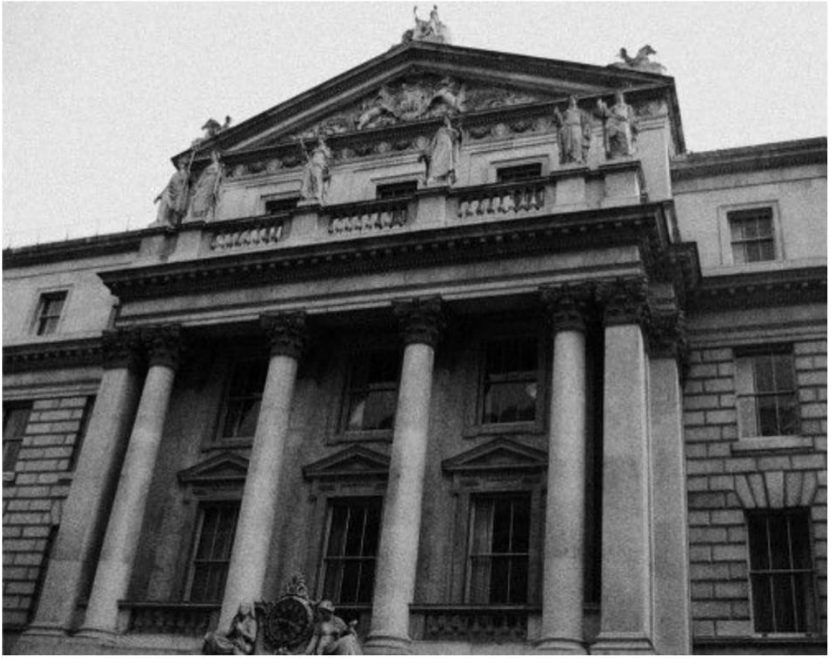

THE CONFERENCE

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2

HERE WAS THE HOTEL ERD WITH A LOBBY FULL OF ANGRY men. They radiated irritation in a palpable haze that dissipated in the room's stale air, and it seemed to Lena as though some natural process was at work, a discharge generated spontaneously when enough of these agitated bodies came together. There seemed to be no real intent to the anger, any more than there can be said to be a meaning behind the heat of a fire. It will simply continue until the fuel is consumed.

The reception desk gave a little focus to this stridency. It was under siege from men waving papers and passports as if they were affidavits and appeals awaiting the attention of a court of justice – documents that would establish beyond doubt the legitimacy of their petitions. One figure had struggled to the front of the mass, creased all over as though he had just been unfolded from his own battered suitcase, and he was explaining in jagged splinters of English and German that his reservation had been paid in advance by his university in Belgrade. The receptionist was hunched with his face inches from the desk, scanning the papers before him so thoroughly that he might have been committing them to memory. It was a battle of wills, and all the other staff had gathered to watch, hovering in a manner that implied their assistance might be required at any moment, and thereby making the most of this excuse to ignore the entreaties of the other plaintiffs.

Iain Aitchison was right, Lena thought. Their little pension overlooking Neuer Markt was going to be a haven.

Ψ

The Hotel Erd, then: flaunting its angular body on prestigious Makartgasse, seducing you with a promise of Old Empire decadence. Like a faded Viennese whore, adept through years of practice at shifting all the shame

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onto its clients. Its plinths and scrolls, its twisting torsos and helmeted maidens and stone garlands screamed Mozart at you, and there was *The Magic Flute* playing in the lobby in case you missed the point.

The hotel preened itself opposite the Neo-Renaissance Academy of Fine Arts where, in 1907, the eighteen-year-old Adolf Hitler failed his entry exam. The guidebooks advertised this as though it was a matter of national pride, implying that the Austrian empire had discerned the Führer's essential vulgarity long before he returned to smash shop windows and eat *Sachertorte* in the Hotel Imperial.

But you did not need to penetrate far into the Hotel Erd to see that this was baroque on a budget. The lobby was etiolated and careworn, and so were the staff, each of them barely restraining a sneer. One of the lozenge-barred elevators bore a sign that read 'Defunkt', and the 'International Konferenze on Space-Time Absolutness' was announced by a handwritten notice propped up on a chair.

And what was space-time absoluteness? Lena had no idea. But as she watched the mêlée thicken and congeal, she realized that these people had come with the intention of expending similar sound and fury on whatever it was they thought was absolute about space-time, and she felt the familiar queasiness, the rising panic in her gut. Out of my depth again. I said I wouldn't let it happen, but it has.

This had never used to matter. For several years, being out of her depth was almost the only dependable circumstance of her life, and she had never truly feared that bad things would follow, because who would know and who would care? She was just a junior reporter at a trade union meeting or a court hearing or whatever insignificant subplot in the grand narrative of power and policy her editor or her treacherous instincts had propelled her towards. She usually worked for publications so desperate to fill their pages that the most banal copy from a freelance writer was accepted without comment or correction. You could compound clichés and slaughter syntax; the text was only there to fill the space between advertisements.

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But that was before what she now felt obliged to regard as her big break. After her exclusive story had spawned copycat headlines in the serious dailies, Lena had resolved to take on no more commissions about which she knew nothing. 'The stakes are too high now,' she told herself, 'for me to go about making a fool of myself. It's time to get things right, to sound authoritative. After all, what I write can make a difference.'

Oh, *right*. Weeks after the celebrated story, she'd not written a single new piece. The South London local papers had clearly decided that Lena Romanowicz was too much of a rising star to turn copy for them now, while the glossies and broadsheets seemed quickly to forget her scoop, never mind that *The Times* and the *Guardian* had both followed it up within days. Commissions did not rain down; nobody, in fact, called at all. (Sobering up the answerphone message had been a needless precaution.) Even *Cosmopolitan*, which had basked in an unaccustomed aura of investigative credibility when it published Lena's article, seemed to have concluded that it was a fluke she was unlikely to repeat.

Finally, she'd resorted to freelance proofreading and subediting, the old standbys of the struggling hack. There were bills to pay, her rent was in arrears. She watched herself reverting to her former life as a shuffler of meaningless words.

And then she saw the article about Karl Neder.

Ψ

'You were reading a science journal? Has he got to you at last, then?'

'I'm being foolish, Davey, aren't I? Well, it never stopped me before. I'm sure there's a story here, but I should know better than to be thinking of writing it. After all, this is the theory of relativity. What do I know about the theory of relativity?'

'Your starter for ten: who invented it?'

'Who –?' She advanced gingerly: 'Einstein, I suppose.'

'There you go. You're way ahead of the layman already.' Davey had a clutch of science A levels, and his physics teacher had entreated him to take the subject further. But his heart had never been in it. Try as he

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might, he'd not been able to locate the poetry of physics.

'Hoorah for me. I guess some stuff gets in by osmosis. But how does that help me? I don't even know what's relative about it. No, don't try, Davey, it'll depress me. And you know what depresses me most, don't you?'

'You're worried you'll resort to asking your dad.'

'Well, I won't ask him. But then I'll end up looking stupid.'

'I don't think so. You'll end up worrying that *he* thinks that.'

Lena sighed. 'How are you doing, Davey?'

'Better. Yes, quite a bit. Really I am. They – you know, the company – they wanted to give me some money.'

'And you said no, didn't you?'

'Well, I thought about it. I pictured it in terms of a 1959 sunburst Les Paul, or a first edition of Crowley's *Book of the Law* I saw in Hebden Bridge. It was horribly seductive.'

'And then you said no.'

'I'm happy up here, Layn. On my own terms, I'm happy. Happy enough not to take public relations bribes. If I'm going to sell my soul, it won't be to an industrial conglomerate, you know that.'

'They couldn't afford your soul, Davey.' Her lip trembling against the mouthpiece, and here now, a single tear that he'd not see up there on the Yorkshire coast, though he'd hear the trace of it in her voice.

'Listen, you don't really need to understand relativity to do this. You just need to understand this man, this – who? Vader?'

'Neder. You're going to sound like Professor Romanowicz if you're not careful. He said that to me, you know, after he read my article. "Lena,"' – she turned out a good impression of her father, and why not, after all? – '"you're a people person. I understand physics, but you understand people."' Davey sniggered, as he always did.

Ah yes, *people*. She envied her father his ability to regard people as a kind of category, a species or genus or whatever it was, or better still, a peculiarly complicated class of fundamental particles. That's presumably what he'd call taking the broad view. To Lena, people occurred one at a time, and that was the problem with them. She

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wondered whether, to be labelled as someone who 'understood people', you needed in fact to be confounded by them, deeply and perplexingly.

But with Karl Neder she was avoiding that issue, studiously and with considerable effort. She sensed that he would perplex her to a dizzying degree. Maybe that was why it frightened her, yes, it frightened her that her heart had leapt when she read the story in her father's study. She could discern no reason why that should have happened, and it was precisely in this that her misgivings were rooted.

'No, I don't read *Natural Science*. Of course I don't. It was lying around.'

'Ah. At the dentist's. Or, let me think, on a desk in Canterbury.'

'Yeah, funny. Well, it's how he relaxes, isn't it? The Goldberg Variations and a copy of *Natural Science*. Or Nabokov coupling with Newton. Ugh, imagine.'

'Well, give me a reference. I want to read it – I'm sure they stock *Natural Science* in the reference library in York. I get the feeling you've been hooked by this Karl Vader.'

'I don't know about that.' It sounded alarming, put that way. 'I'm looking for something to write about.'

'Funny place to look, isn't it, Layn?'

'We have to take stories where we find them. Oh no, I wish I hadn't said that –'

'Don't be daft, I know what you mean. So, where am I going to end up seeing this one?'

'Ani put me in touch with a man at the *Observer*. The editor of their colour supplement, some bloke called Tim Evers. He's asked me to lunch.'

'Blimey. That won't be pie and mash then, will it?'

'I expect it will be dreadful. I've no idea what I'm going to tell him.'

'Just tell him about Karth Vader. Sorry, I'm regressing. Tell him what this man is like. He sounds just the right shade of bonkers.'

'I haven't a clue what he's like. All I have is this clipping. I'll send you a copy.'

'I'll look it up. I like a day in the library.'

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DISSIDENT MAINTAINS VIGIL IN SOFIA

Margaret Strong, Sofia – *The Hungarian physicist and political dissident Karl Neder is still sitting on the steps of the Soviet Embassy in Sofia, Bulgaria. He has threatened to set fire to himself if the Soviet President Mikhail Gorbachev does not consent to release physicist Andrei Sakharov from surveillance and virtual house arrest by the KGB.*

Neder is no stranger to controversy. He has repeatedly claimed to have invented a perpetual motion machine, which he has demonstrated in his private laboratory in Linz, Austria. He has published several papers claiming to show that both the general theory of relativity and the theory of quantum mechanics are incorrect. Neder believes that physics can be described by a classical model, retaining the idea of an electromagnetic ether.

But while his scientific heresies have earned him no more than derision from the physics community, his political activities have been more fraught. He is banned from entering his native country, and also barred from several states in the Warsaw Pact. In 1977 he was detained for some months in a psychiatric institution in Bulgaria.

Now he has returned there to engage in a battle of nerves with the Soviet government. His statement to the press says: 'If Comrade Sakharov is not granted full political freedom, including the freedom to travel abroad, and his wife is not permitted to leave the USSR for medical treatment, I shall immolate myself on the steps of the Soviet Embassy in Sofia.'

Neder has received no response to his ultimatum, but he has reiterated his determination to carry out his threat if necessary. 'Perhaps that is the only way the world will awake to this monstrous oppressor,' he says. 'The time for timid gestures is over.'

Ψ

'The one thing I've never understood about you,' her father had confessed some years back, 'is your affinity for oddness.' She had thought she detected a hint of

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approval, even admiration, in his voice. Yet as Lena watched the horde crowding out this forlorn Viennese hotel she wondered if he had a point. She had assumed that this meeting of scientists, no matter how nonconformist, would resemble the many other gatherings of academics or officials she had attended with pen and spiral notebook, at which maladroit formality or comradely cliquishness were no more than self-conscious veneers that cloaked a fundamentally unremarkable wish to belong. She had not expected the turbulent confusion of the crimson-and-gilt lobby of the Hotel Erd, where everyone seemed to be nursing a grudge, a sociopathic disorder or a severe lack of sleep. Apparently they did not come from the same stable as the physicists she'd met on the Canterbury campus, who were either jovial types with a tendency to depreciate their own research in voices a little too loud, or else owlish academics speaking a foreign language of particles and partials with what seemed like infinite patience and precision and sincerity. Physics departments, she'd decided, were just another professional club, unified by forces that she sensed but could not quite grasp.

At the Hotel Erd there seemed to be little sign of that sort of thing. It was more like a railway terminal. Some figures sat alone in the threadbare lobby armchairs or on makeshift seats fashioned from their baggage, reading books or notes as though they were in a library and thus released from the duty to acknowledge the society of others. Some formed cabals that might have been plotting coups to take over the whole ramshackle affair. Here they were engaged in headlong and vigorous disputes over past injustices. There they wandered in a daze, as though they had been expecting to find themselves in entirely different company. One or two stood apart and gazed on the proceedings with disdain, implying that the whole event was a tiresome necessity they would be glad to have done with.

But what would I know, Lena thought. What does this *people* thing come down to anyway? She guessed she might have some skill at listening to them and writing down what they said, but that did not in itself make them any less mystifying. Perhaps, she thought, that is how I

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am going to be filed now, after *Cosmo*. 'Lena Romanowicz, yes, she's a people person. She really got those people to open up. She really got at their pain.'

No I didn't. That pain wasn't theirs.

Ψ

At least she did not have to face the horde alone. Iain Aitchison came recommended by Roy Battle, the jaunty editor of *Natural Science*, who had set her on her course with what seemed like glee. Aitchison was a Scottish physicist who worked at CERN, the European laboratory for particle physics in Geneva, where Lena went in January to meet him.

'He reads around the extremities, you might say,' Battle explained. 'And he goes to the meetings this crowd organizes. His colleagues think it's most peculiar, what with him being a pukka particle physicist – top quark and so on.' (Lena wondering whether 'top quark' was a compliment that physicists bestowed on one another, and knowing better than to ask.)

'Then why does he dabble in the weird stuff?'

'It's not dabbling exactly. He takes an interest. He seems to have set himself up as a sort of unofficial observer of the fringe.'

As she spoke with Aitchison in his severe little office, Lena found it difficult to penetrate any more deeply into the nature of that 'interest'. But there was something else that disconcerted her about his conversation, and it took her half an hour to see what it was. He explained to her his role at CERN; he talked about his work (the top quark, it seemed, was a piece of an atom), his duties, his research group, his views on the state of physics. But not once had he used the personal pronoun. It was as if he wished the central figure of his tales to remain ghostly, a mysterious presence barely glimpsed, certainly nothing to do with this small, aquiline man with unruly eyebrows and a slight squint who was narrating the tale.

'These little beasties called quarks are hiding in the tunnels out there,' he said, gesturing vaguely out of his window at the gelid Swiss drizzle. 'Frankly, Fermilab is likely to snare one of them first, but one can hardly let on about that, eh?'

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When Lena asked how big a quark was and Aitchison began to explain that this depended on what one meant by size, she was reminded of something her father had once said about how everyday words corrupt science. ('What is life? A bloody silly question, that's what.')

She glanced around this functional cubicle and wondered if its neutrality of hue and geometry were deployed as a defence against such messy quotidian concepts. Certainly there were no everyday words on the whiteboard, a palimpsest on which eviscerated theories spilled their entrails. How do you search for things that have no 'size as such'?

'Dr Aitchison, I'm told you know about Karl Neder.'

His response was at first disappointing. 'Haven't met the man.'

'But you know of his work.'

Aitchison did not answer at once; but then he made a small sound in his throat that might have denoted either distress or distraction, before rising to pull a box file from a cupboard neatly packed with others of its ilk.

'Oh, so you've got a Neder file too? That's the second one I've seen.'

'This? It isn't all about Neder. You see, Karl Neder is part of a community. You shall have to meet them. Now then, here is what one might suggest to you.'

He extracted a pamphlet, glossily but cheaply bound, which announced The Third International Conference on Space-Time Absoluteness: ICSTA '86: Hotel Erd, Vienna, 15 March 1986.

'Neder will be there, it appears. He is one of the organizers, you see, one of their so-called international committee. You want to go?'

Ψ

They followed a trail of scratchy arrows to a trestle table in a back room, where the participants collected their badges beneath a painted canvas banner confirming that this was indeed ICSTA '86 (the current date inscribed on a paper square, taped over the ghosts of meetings past). Aitchison pinned his name with a flourish onto his corduroy lapel – it identified his affiliation as 'Cern', making it sound like a small town in Romania. Lena had

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no badge, for she had not registered in advance. Announcing herself as a journalist, she threw the administrator into confusion until Professor Tomas Neumann was summoned to adjudicate.

Neumann was on the editorial board of *Foundations of Physics*. She knew this because it said so on his badge, adding for completeness that he worked in the School of Physics and Astronomy at the University of Trieste and that he was Conference Chair. (Neumann's badge in truth provided a dense paragraph, a miniature CV, and he seemed accustomed to standing stock still, gazing into the space above people's heads while they stooped to read it.) Without Neumann, there would be no Conference on Space-Time Absoluteness, Lena subsequently discovered, because he had persuaded his university to help fund it, to offer bursaries, to print leaflets and place advertisements in *Physics Today* and *Naturwissenschaften*. Neumann was fifty-five, his hair was exquisitely sculpted and the colour of zinc, his spectacles were precise rectangular prisms; he was a dignified presence. 'We admit the press only by prior appointment,' he said.

'Balls. These people would kill for a bit of publicity,' Aitchison told Lena later. 'Go to most conferences and they welcome the press like the Second Coming. Here they'd normally be lucky to get a trainee scribbler from the local paper. That was all a power thing, as you so cleverly discerned. You followed the ritual of obeisance splendidly.'

In fact she had been about to confess to Neumann that she wasn't exactly there to report on anything, that she just wanted to meet Karl Neder; but instinct had guided her instead to apologize for the oversight in the arrangements, and to explain that she was a writer for the *Observer* in London (which was true after a fashion) and that she would of course be very happy to show the organizers anything she wrote about the conference (without specifying when that might happen). She began to wish she'd thought more carefully about her outfit. Black drainpipe jeans, a man's red shirt, and worst of all, motivated by vague images of Tyrolean snowfields but perhaps primarily by an unacknowledged impulse for

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body armour, the heavy black cuirass of her motorcycle jacket. It added up to a student-style confusion that spoke of anything but journalistic authority. Which was perhaps irrelevant next to Aitchison in corduroys and tank top – no point asking *him* how one dressed at an ICSTA gathering, she'd seen that at once – but it made a poor showing before Neumann's crisp suit and cravat.

Yet in the end he had relented magisterially, and now she had a badge too, and it was blue and handwritten and said 'Press: London'.

But then there came some bad news. No, said the woman behind the trestle table, once Lena was properly labelled and Neumann had stalked off. No, Dr Neder had not yet registered. There had been no word from him, her colleague admitted. They had no idea if he was going to come or not.

That was when a tall, lean man, clothed in black from head to toe like Stoker's vampiric count, sidled up to her and murmured, 'You are looking for Karl Neder?' Lena suppressed a giggle at the comic theatricality of it. She wondered whether she was about to be slipped a piece of paper with a scrawled address: directions to an alleyway where a gimlet-eyed stranger would usher her swiftly into a secret cellar.

'I don't think he will come,' said Dracula. But the Transylvanian effect was undermined by the accent, in which the Slavic corners were rubbed smooth by more than a hint of the Athenæum Club. The man could almost pass for Basil Rathbone. Rathbone pretending to be Dracula.

He wore no badge, which seemed akin to casting no shadow.

'That would be a shame. I was hoping to meet him here.'

'I am sorry to tell you that he does not always keep to his arrangements.'

'Oh, there was no arrangement. I just knew he was on the programme.'

This was the point where one held out one's hand and gave one's name, but Count Basil did not. He made a slight nod and stood waiting with eyes of treacle.

'I am interested in his work.' She pushed on, blindly.

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‘That is, I don’t understand it, but I wanted to discuss it.’

‘Do you believe it?’

‘I don’t understand it.’

‘Is it wrong to believe in things you don’t understand?’

‘On the contrary, you could say that’s a precondition of belief, surely.’ Oh, you could indeed, if you were Professor George Romanowicz FRS. That’s where I get all my epigrams, didn’t you know?

Lena could see she would have to take the matter into her own hands, or the Black Count might start quoting Hegel at her.

‘So you know Karl Neder then?’

‘I have known him for a long time. Yes – a long time.’

‘Then what makes you think he won’t show up?’

‘He knows that I am here, for one thing.’

You can stop trying so hard, Lena wanted to say to him. I’m not your type – it doesn’t work for me, this cultivated mystery, this Mitteleuropean urbanity, this elegant and terribly sexy Habsburg accent. It would probably work on any other woman in the room, probably on most of the female population of Vienna, but I’m from the wrong place and the wrong time. She had an impulse to confide in him that her tastes ran more towards thin boys with obsidian hair and bad skin, nursing self-doubt and hidden bruises. Davey, she suddenly thought – oh Davey, you should be here to see this! Imagine if we’d run into this ghoul on the steps in Whitby. We’d have become slavish acolytes for the price of a fish-and-chip supper, we’d do his every bidding, rob graves at midnight and bring him the crumbling, oozing trophies. But that time was past.

All of which did not prevent her, however, from starting to rather enjoy herself.

‘In that case,’ the words were spontaneously generated on her tongue, she just let them fall out, ‘you must be the next best thing. You can tell me all about your friend Dr Neder.’

‘I could indeed. But should I?’

‘Why should you not?’

‘What would you do with that information?’

‘I would subject it to proper journalistic scrutiny.’

‘Ah. Very good. You’re not a scientist then?’

‘Oh, please. They’ve taken the trouble to colour-code

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me, look.'

'I see. London, yes. Now I start to hear it in your voice.'

'Kent, but close. You do regions, then?'

'I have spent a lot of time in England.'

'That's plain enough. You could pass as a native in Pall Mall.'

He inclined his head at the compliment. 'We spoke English from an early age in my family.'

'And where did your family call home?'

'Let's say, from Hungary. Like Karl Neder.'

'Don't you have a badge?'

'I don't like badges. Look at yours. "Press: London". How unkind that is. You have been transformed into the London press. Not only is that a rather awesome responsibility – one might even regard it as a stigma – but it is so dreadfully impersonal. Besides, it conceals your name.'

'Yes, well, there can be a value in concealing one's name, can't there?'

'Sometimes so. However, I am Kam.'

She wondered what that could possibly mean.

'I am Jaroslav Kam.'

'Oh, I see. Don't any of you Hungarians have Hungarian names?'

'It's Slavic, true, no Magyar there. As for Kam… well, not now. Let me say merely that there are ancestral reasons for this idiosyncrasy, of some, ah, importance to my family. But it has caused problems, of course, you are right to see that.'

'Well it would, of course.' She had no idea what he was alluding to. 'Listen, Dr Kam. Let me get you a coffee, somewhere that isn't here. I'd really like to hear more about Karl Neder. You could tell me about your work too, if you like. I don't know any physics, but people tell me I'm a good listener.'

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3

LUNCH WITH TIM EVERS WAS LONG, AND SEEMED LONGER. Two bottles of a fruity white on top of a small charred fillet of something marine, decorated with bitter leaves. Tim had the expense account, but in one way or another it was costing them both dear.

He was blond and fleshy, he lisped theatrically and acted unashamedly like a roué twice his age. He did not lack for wit. There was even a kind of charm in his amorous buffoonery. But not three hours' worth.

('Remember this,' her flatmate Ani had told her. Ani, with half of Fleet Street in her address book and a thick portfolio of clippings with bylines, the trophies of her transatlantic gusto. 'Remember that Tim is basically harmless. And that he's cleverer than he seems, though he knows even less science than you. And don't forget that the *Observer* is a step up from *Cosmo*, if it's gravitas you're after. Worth whatever it takes. So if there's no such thing as a free lunch, you might as well order the lobster and Romanee Conti.')

'What attracts you, Lena? To Neder, I mean. Isn't this all a bit ripe, this storming the barricades of orthodoxy?'

'He unsettles people. I don't think that's supposed to happen.' She was extrapolating, with only a little licence, from her meeting with Roy Battle. 'Cranks get ridiculed or ignored, but he gets under the skin.'

'I think he's got under yours. But that's a good sign, Lena, you need to be involved to make this thing work.'

'I'm involved as a writer, Tim. That's what we do, isn't it? Put ourselves into the story.'

'I can see it's what *you* do.' He looked at her with provocative relish, head cocked to one side. She regretted the lipstick, borrowed from Ani and now smeared ineptly on her wine glass: a glossy carmine paste with some overheated label like Scarlet Letter. But it had seemed rude to go unadorned into a restaurant so select that it didn't have a name. Even when the host was a man like Tim Evers.

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‘I’m not going to pretend that when I saw your article I had the faintest idea who you were. But you know what? It got me very interested. It was committed. I could see you were someone who can consummate a story, as it were.’

Flirtation and innuendo she could deal with. True, they awakened the old hollowness, the if-only-you-knew feeling, as though she were a crone clothed in illusory youth. But she knew that game well enough. What she felt she could not bear was the way Evers wanted her to collude with him in casting her as a real writer, a journalist with vision and fortitude, nobody’s fool. Rather than an insipid wraith who’d once written a story in a blind fury, shoving tears out of the way with her fists, which brought her acclaim that for once she’d not cared for in the slightest.

‘There is a potential snag, of course. Our science editor tells me that this man Neder is not taken seriously by any scientist he knows.’

‘And yet his situation gets covered in the most prestigious science journal in the world.’

‘Yes, isn’t that interesting? Now, the reason I wouldn’t dream of setting our science bod onto this is that he would simply debunk it. I don’t think our readers would care to hear that the foundations of modern physics are after all as rock-solid as the textbooks say.’

‘Ah. Whereas I have no credibility to lose.’

‘I wouldn’t put it like that. I can see you have an open mind. I’m very attracted to that.’ He was happy to let that remark sit between them for a while. ‘Actually,’ he continued in a conspiratorial tone, ‘our resident boff tells me the man is a total nutcase. That made it all sound *much* more appealing.’

‘It sounds as if your resident boff doesn’t go in for fine distinctions.’

‘Oh, absolutely not! I like that: fine distinctions. Grades of nut. Do you think Neder is a nutcase?’

‘I don’t really care about that, Tim. If he is mad, that’s fine with me.’ The surge of boldness almost shocked her as she said it. But the sentence, when it ended, seemed only halfway through. As if to emphasize that, Evers poured more wine.

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‘And it’s fine with me too,’ he said at last, ‘so long as it’s a good story. Do you know what would make it a good story?’

Lena found a little smile, and let him have it. ‘Go on then.’

‘Why do people always like to read about monsters who dismember their victims’ bodies and put them under the floorboards? Or cult leaders who inspire mass suicides? Or mothers who smother their babies and leave them in bin bags? Not in the *Observer*, I mean, and probably not over chargrilled monkfish on rocket either, so pardon me, but nevertheless? Do we just have a lust for Grand Guignol? Is it a there-but-for-the-grace-of-God thing? I’m not just talking about the gruesome stuff. We love obsessives, mad Blakean visionaries, idiots savants, sexual deviants, the whole caboodle. At face value, we make sure our crazies are emphatically Other, they are what we are not. But what makes them come alive – look at the loons in Shakespeare, Dostoevsky, Conrad – is when we can sense that inside us is a seed of the same stock. That’s what creates the delicious frisson.’ He winked, though the effect was diminished because his glasses had become slightly steamy. ‘Don’t breathe a word of that at the *Daily Mail*. And I should know – I used to work there.’ No point asking if he was serious or not.

‘Now – how does three thousand words sound? With pictures, so take a camera with you. I assume you’ll need to do some travelling – just keep the receipts, and if it goes over three hundred then let me know. I’m going to be upfront, because that’s the sort of fellow I am, and tell you that I’m sticking my neck out here. You’ve obviously enchanted me, shame on you. Publication’s not guaranteed until I’ve seen a draft, though you’d get a kill fee in any event. But I’ve got this sense that you’ll come up with the goods. Because, whether you admit it or not, I would say that Karl Neder means something to you.’

Lena flushed, and Tim Evers grinned.

Ψ

Lena’s career was not a vibrant one. Frankly, it was not really a career at all. She left her journalism course at City University without a job, with nothing in fact except a

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book of phone numbers of editors she'd spoken to once on some student assignment, or who other students had recommended, or who she'd simply looked up in the *Writer's Handbook*. She did some proofreading for the *Ham & High*, then at the *Express* and one or two of the women's magazines at Emap. Until the *Cosmo* piece, her only claim to success was a story in *Woman's Realm* about a man in Hackney who collected cast-iron baths. His wife had moved out of the house when it was so full of baths that there was no room for any other furniture. He slept in one; another became a table, and so on. Not only did Lena's name appear at the top of the piece (almost spelt correctly) but there was even a small black-and-white photo of her, three years out of date and clipped from her student railcard.

Mostly she'd supported herself by hunting down other people's typos and grammatical solecisms on the proof pages of deathly books and dreary magazines. The journalism she'd trained for was a venerable profession, governed by codes and unions; competitive and demanding, maybe, but protective of its apprentices. By the time she finished her course, that tradition was unravelling fast in the new political climate. Her father's forecasts when the country changed hands were all proving to be spot on target.

Lena had been twenty years old then. She'd known exactly what would happen if she visited her father before the general election, but she did it all the same. She was angry with herself for weeks afterwards, but she caught the train to Canterbury like a gull obeying the magnetic summons of Dr Mesmer. She'd promised to see him before her Easter holiday spree in Morocco, and she could never bear to break a promise, however rashly made.

Ψ

'This is a dangerous time,' said George Romanowicz in the conservatory of his house on Whitstable Road. 'I don't think many people appreciate quite how dangerous it is. We've lived through the last decade on the dregs of a revolution, and now it's all used up. All that energy, all that hope. Where has it got us?'

'You're giving these plants too much water. They're not

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all identical, you know. Some like lots of moisture, some can't handle it. You think they're all just *plant-matter*, don't you?'

Lena was surprised that her father continued to tend the potted plants at all, and to replace them when they succumbed to his maltreatment. It was the one aspect of the gardening he did himself, though he showed no inclination to find out how to do it properly. It kept the conservatory looking as she remembered it, which was either reassuring or disconcerting, she wasn't sure which.

Water splashed onto ochre tiles as she carried a brimming saucer to the sink. 'At least when I murder mine, it's premeditated. And you a scientist.'

'A physicist,' said George, 'is closer to an artist than to a botanist. As Rutherford once said, "All of science is either physics or –"'

'Who's this "us", anyway? Not me. What revolution? Johnny Rotten's? Or Che bloody Guevara's? Anyway, I didn't notice one.'

'I wouldn't expect you to. You're the product of it all. Oh, I don't mean that to sound as… harsh as it does, Lena. I don't mean you personally, or rather, not you specifically. I mean the *languid* generation. Who are the radicals now?'

'God, wake up, Dad. Take a look in Leicester Square. The ones with the zips and the green hair.'

'The identikit rebels.'

'Yes, all right, they're the sheep. But things are happening, you know. Who *are* the radicals? Ever heard of Joe Strummer?'

'This isn't radical, Lena. I know who you mean. Defecating on the table isn't radical. Oh, I don't say it's worthless, I can see the point in kicking against all the… the languor, the bloody torpor. But is that really going to change things? Anarchy isn't a philosophy; they knew that a hundred years ago. What these punk people don't see is that power isn't about the Queen any more. It isn't even about the government, not exactly. Power is what you see out there, right outside, on those billboards. That's what's coming, Lena. Stalin thought he could control people with fear and propaganda, but that only sharpens the intelligence. To make it dull, you have to give them

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pleasure.'

'I like pleasure. What else do I have?'

Lena was pleased to see that she could still provoke her father, although it took all her years of teenage experience to accurately interpret the subtle rise in the tone and volume of his voice.

'There are times,' he said, 'when I wish you would do a little more reading. *Brave New World*, for example. That might make you think rather carefully about the bovine pursuit of pure pleasure.'

Then normal service resumed, as George liked what he suddenly found in his head. 'I always thought it a more powerful vision than Orwell's. Fascism dated fast. But mindless consumption – it took real genius to see that coming. Listen, how long do you think it will be before your Joe Strummer is on those billboards?'

'He already is.'

'So it comes to pass, poor lad. And meanwhile, what's happening?' Lena knew when her father was being rhetorical, and she gulped her sweet, tepid tea, looking out at the riotous foliage. A bee was dashing itself frantically at the windowpane, but these iron-framed windows hadn't been opened for years. In a week's time it would be dead and desiccating on the sill. She wondered whether, with each assault on the glass, it had forgotten the last.

'How much do we hear on the bloody box about America's plans for Latin America? Do you have any idea what this Hollywood cowboy has in store, once he's in the White House? Bellow was right to have seen it coming thirty years ago, with his political intellectuals whirling lost in the arms of industrial chiefs and billionaire brass. But what a match they have over there now: the industrial-military junta wedded to the TV evangelists and celluloid celebrities. Oh, it's not any better here. We're being softened up for a right-wing government the like of which we've never seen before. It's not the fascism of the blackshirts or the boot boys any more, but the fascism of the marketplace, where anything can be sold to anyone in the name of economic growth. Even the military is going to start flogging its wares to all comers, you'll see. And this is dangerous – no, it's terrifying – precisely because

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we've lost the will to fight it. Because our new leader will preside over the languid generation, and turn them into her own creatures, and no one will stop it.'

'You sound just like the Trots at uni. A Commie in Kent, who'd have thought it? Aren't you banned from the Royal Society yet?'

'You'd be surprised what gets said at the Royal Society. We don't just sit around reading the bloody papers, you know.'

Ψ

What dismayed Lena was that she found all of this admirable. She wanted to see her father as a faintly absurd anachronism, a leftover from the socialist cabal of Huxleys and Haldanes and Bernals, blustering in a comfortable armchair in cosy Canterbury, bantering in the departmental coffee room about Suez and Franco. But she could not shake off a sneaking respect for these convictions she didn't share, for the moral fibre and the mental discipline of it. Her father had publicly declared that he would never accept funding from the Ministry of Defence. It was not clear that he was ever likely to be offered any, but all the same it was a courageous statement when so many others were working on ballistics and submarine hydrodynamics and nuclear shielding. He knew where he stood. Lena had no idea where she stood.

She suspected it was somewhere near her father. But was that just because he'd put her there? And if she stood anywhere near him, she was unlikely to get a word in edgeways.

It made her callow. She sensed that much, dimly. It made her opt out. When the election came, she didn't vote. She despised herself for it, but she sat determinedly all day watching television and drinking coffee. It wouldn't have made any difference anyway, she told herself, as the Conservatives' landslide victory began to rumble in from the polls. This is what people want. But she knew that the reason she could not drag herself to the polling booth was that she would feel she was being a good girl. Sod that. She would be a languid girl.

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4

It might have been simple tact that prevented Jaroslav Kam from mentioning Lena's father, but she doubted it. When he told her he had presented a talk last summer at the University of Kent, she cursed herself for having scribbled her name onto her badge earlier, spurred by his remarks at the Hotel Erd. It was all she could do now to restrain herself from plucking the damned thing off her breast, where she felt it broadcasting to Kam a constant invitation to make the connection. But no, she thought, he's made it already, and understands that there's some reason why I didn't mention it myself. He can see it's something I don't want to admit to. And even if he has no idea what the reason is, this gives him a little power over me, though he's too bloody smooth to show it.

His hair was dyed, Lena decided – she knew from experience that colour this uniform didn't come naturally. But she had to admit that the result was effective: it made Kam ageless, and somehow immune to worldly influence. He did not quite belong here – or rather, he could belong equally to any place and time.

Yes, he'd surely have known the name of the head of department at Kent. Professor Romanowicz had probably even introduced the seminar in person. And that's just made him all the more curious about what I'm doing here. Maybe he thinks I'm on a spying mission for the physics police.

Yet Kam had made only the briefest of allusions to his visit to Canterbury – he commented on how his work shed some light on the research of Frank Symons, who, Lena had noted with some astonishment and dismay, was also speaking at ICSTA '86. Symons was a member of her father's department, and Kam said casually that his seminar in Kent had been given at Symons's invitation.

All the same, she was intrigued. Was this really such a fringe event, if it included people like Symons? Would Kam have got anywhere near the physics department of the University of Kent if he was nothing but a crank, as

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Aitchison seemed to consider them all?

Lena could follow nothing of Kam's work except that it was concerned with water, and also with quantum mechanics. For all his fluency in English, he did not have her father's gift of communicating difficult ideas, and Lena was lost long before he began to expound on coherent proton wavefunctions. 'Well,' he concluded with a laugh, 'it is a long way from what I did with Karl all those years ago.'

'Was that in Hungary?'

Kam was silent for some moments, as though thinking carefully about how to respond, although when he finally said, 'Yes, out to the east,' it was in an offhand manner that implied this was not the subject of his distraction.

'There was a time,' he went on, 'just before war broke out, when the Hungarian intellectuals were keen to assert their nationality. This was the era of Horthy, you see, who called himself regent and acted like a king and outlawed the Communists. There was a lot of fascist talk. Many people spoke favourably of Hitler.'

Lena could not see where this was going. It felt as though Kam were now telling her a legend, something that happened before human remembering, when ancient forces shaped the fate of the world.

'All the old nobility, they were idolizing that petit-bourgeois despot and calling for the expulsion of the Jews. And so they were all taking on these Germanized names, it was absurd – all of a sudden, the counts became Hermanns and Gottfrieds and Werners. So I, a young boy, I could see what was going on around me, and so I wanted to do the opposite, to show I was a proper Székely. I told my father that henceforth I was to be called Károly. He ignored my wish, of course. After the war, when I got to know Karl, I found out that he had done the same. Karl, you see, it also becomes Károly.' He added, as if by way of explanation, 'You asked earlier about my name.'

Friends from boyhood. The man was worth the price of a coffee, then. Even at Viennese rates.

'Both Kam and Neder, incidentally, can be linked to Jewish roots, so ironically we might have been better off changing our family names instead. But that is another

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story.'

'Why does Karl Neder avoid you?'

'Forgive me, Lena, but I'd like to ask you a question instead. It is not unrelated, perhaps. What is your interest in Karl Neder? I don't think you have come to Vienna to research the science of space-time absoluteness.'

'Bloody right.' Said, to her surprise, like a teenager. 'I haven't got a clue what space-time absoluteness is, and please don't try to tell me. I'm… to be honest, Dr Kam, I'm a little confused.' She looked around the coffee house, more in search of some relief from his dark eyes than to take in the surroundings. But the walls were covered with speckled silver mirrors edged in curlicued gilt, which directed her back to the two of them huddled at their table. As though they were sitting in a vast room full of Lenas and Kams, or rather, surrounded by alternative versions of the same scene. At least I can see his reflection, she thought.

'You see, I could just tell you that I've been assigned to the story by a British newspaper. But I have the feeling that it might not be the story I thought it was. I don't think I'll know if that's the case or not until I meet Neder. But it seems that might not happen now – or not here, at any rate.'

She was regretting having asked Kam about his relations with Neder. Not because she didn't want or need to know the answer, but because she'd begun to suspect that she had better be prepared, had better have a stronger sense of the ground beneath her, before hearing it.

'Oh, don't give up yet. I may not have quite the power to repel him that I attribute to myself. Do call me Jaroslav, by the way.'

Yes, Lena thought, I'm out of my depth. 'Look, I'm very grateful for what you've told me, and I hope we can talk some more about this. But I'm probably a bit tired. We barely stopped to leave our bags at the guest house before we came over. And I should take a look at all this reading material they've given us.'

'We?'

'I came with Iain Aitchison. The Scot.' She felt she was confessing to treason. 'He told me about the conference,

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you see. Look, I'll see you later.'

Ψ

Talking to Jaroslav Kam only deepened her misgivings about the whole affair. Had she colluded with him in somehow skirting around the matter of Karl Neder? Was the discomfort she had felt really hers, or had Kam deftly given it to her?

What disturbed her most was a sense that her disappointment at Neder's absence was tempered with relief. That was an unpalatable thought: was she reluctant to let him become too concrete? All at once she felt tawdry and futile; she longed to confront Neder and berate him for his slipperiness.

It was absurd, really. After all, she knew almost nothing about Neder that was not contained in the bundle of letters that Roy Battle had allowed her to copy in the offices of *Natural Science*. ('Strictly confidential of course, ha ha!') She had brought them with her to Vienna, and took them out now in her room on Neuer Markt in the hope that they might make her subject less elusive. The documents were hardly reassuring, but she brushed their words with her fingers as though searching for a code hidden in their texture.

Dear Dr Battle,

To my last letter of 27 May 1980 I have not received an answer. With your silence you demonstrated that you do not esteem me, as my letter ended with the words: If you will not answer my letter in 10 days after its reception, you do not esteem me, and maybe, it will be better to break our relations.

But I am sorry to say that such a break is not possible, not on account of my personal dignity, but because the stakes here are the interests of the whole of humanity. However your silence shows an uncolleagial face, and I must say also with sorrow that it is lacking in ethics. Until now I have thought our correspondence was based on the commonly accepted gentlemanhood, but I see now I must take a different attitude.

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I send you now for publication the following three papers:

NEW MEASUREMENT OF THE EARTH'S ABSOLUTE VELOCITY WITH THE HELP OF 'ROTATING MIRRORS' EXPERIMENT. (The paper is sent exactly in the same form as it was submitted to you on the 13 Feb. 1980 and rejected by you during a phone conversation on the 23 Mar. 1980. You must look at it again and with new eyes, in light of the following.)

ON THE ACTION AND INTERACTION OF STATIONARY CURRENTS. (This is a slightly revised version of the paper 'Mathematical nonsenses...' submitted to you on the 6 Jan. 1980 and rejected also during a phone conversation on the 23 Mar. 1980. Revisions are as per your criticisms then expressed, which as I tell you, are not serious.)

COUP DE GRACE TO RELATIVITY AND TO SOMETHING ELSE. (This is a slight variation with SUBSTANTIAL EXTENSION of the paper 'Coup de grace to relativity' submitted on the 24 Nov. 1979, rejected by you on the 14 Dec. 1979, resubmitted on the 29 Dec. 1979 and rejected by you during the phone conversation on the 23 Mar. 1980.)

I pose to you (and to the editorial staff of NATURAL SCIENCE) the following ULTIMATUM:

You have to send ALL THREE PAPERS for composition at the same day of receiving this letter. You shall make better drawings of the figures which are not well drawn by me. You have the right to introduce only LINGUISTIC CORRECTIONS in the papers but no changes in the sense. In the most speedy way you have to send me by express the proofs of the papers which at the same day will be returned to you and all papers are to be published in the same issue of NATURAL SCIENCE. I beg you to inform me by phone call or by telegram whether you will fulfil this ultimatum or not. If you will reject it, I shall go immediately to the English Embassy in

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Prague and after making a one-day warning strike, ***I shall commit myself to the flames in front of the Embassy.***

If you will again play the non-gentleman and you will not phone (or cable) me your decision, please, say this decision to your secretary, so that she can communicate it to me when I phone.

I have discovered a perpetuum mobile. *Any day of delaying its announcement costs milliards of dollars and poisoning of air, water and soil. I cannot permit you to make this crime against humanity, because you are unable to understand a couple of childishly simple formulas.*

Dear Dr Battle, I know how to wring the neck of a totalitarian power! The Internal Minister of Bulgaria (who killed George Markov in London) fulfilled both my ultimatums (of May 1977 and August 1977) in the given 48-hours time-limit. Do you think you are a harder nut for me than the Internal Minister of Bulgaria? I beg you – at the last moment become aware of the seriousness of the situation and do not provoke a scandal which will end with your complete scientific and moral bankruptcy. I send you now the book THE BITTER ROAD IV. Look at least to the pictures to understand who I am.

Hoping even now in your good heart,

Sincerely yours,
Karl Neder

P.S. You may mention this ultimatum in the press and print excerpts of it in NATURAL SCIENCE. You can make any comments.

Lena knew about *The Bitter Road*. She had gone to the British Library, where she discovered that, against all expectation, Karl Neder's five-volume work was indeed held in the vaults. Each book was a slim affair, cheaply printed by the Freie Presse der Leute, a firm in Vienna that Lena suspected was basically a vanity publisher. How on earth had they got here? Perhaps (it did not seem unlikely) Karl Neder had deposited them in person.

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She collected the neat pile of books and carried them to her desk, clicked on the adjustable lamp and, as the cold London light died in the high windows, made the first ridge down the spine of *The Bitter Road*, Volume I.

It was evident that no one had read these books before her. Their pages were not marked by thumbprints or marginal notes. They were not furred and softened at the corners, but were still stuck together from the downward pressure of the cutting blade.

She could see at least that they were books about science, because nearly every page held an equation. Some contained little else. Brief words of explanation or punctuation were stepping stones through the dense algebraic exposition: *Thus*, and *So*, and *We can write*. Lena had stared for a long time at a dozen or so of the fresh-smelling pages before dejectedly giving up. She could not possibly formulate the slightest opinion on whether Karl Neder's theories were right or wrong. She did not even know what the theories were about.

In Volume I there was a dedication: *To Dora, who put me on the Bitter Road*.

Lena had opened Volume II and quickly learned what she needed to know: it was like Volume I, a maze of algebraic calculus. She had looked at the final pages of both volumes and had found that they each ended with an equation. In neither case did this appear to be a conclusion, rather just a break in the flow of symbols. A marker denoting where, in the middle of Neder's logical flow, his money had run out. Volume II had a short and impenetrable preamble, then took up from where Volume I had left off.

Lena had not opened Volumes III, IV or V.

His papers, a bundle of which was enthusiastically proffered by Roy Battle, were no better, and she'd accepted them only to avoid seeming indifferent to her subject. Now in her Viennese pension she pulled one dejectedly from her folder. It began with the assertion that

$$\nabla \times \boldsymbol{B} = \frac{4\pi k}{c^2} J + \frac{1}{c^2} \frac{\partial E}{\partial T}$$

As a statement of physics this was quite correct, Lena had

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discovered when, to illustrate her perplexity, she showed the manuscript to Iain Aitchison in Geneva. But he explained that it was not an equation of Karl Neder's devising. It was written by James Clerk Maxwell over a hundred years ago, and it was apparently one of the hieroglyphic poems that scientists like Aitchison knew by heart.

'Have you read Neder's books?' Lena asked him.

'No one has read them. They're unreadable.'

'But you said they're wrong.'

'It would be nice to be able to express the issue that simply. What is in these books is not exactly science.'

'Science doesn't have to be correct in order to be science, surely? Plenty of good scientists have got things wrong.'

'Yes indeed. Even Einstein, as a matter of fact. By and large, however, science needs to be correct if people are going to bother to read it. If Karl Neder's books were correct, they would be revolutionary. Textbooks would have to be pulped, syllabuses rearranged, research laboratories would bear his name. But it is not remotely likely that they are correct, and so it is not worth the extraordinary effort that would be involved in demonstrating why that is so.'

Was that what Roy Battle had been driving at too? She had telephoned *Natural Science*, but when she asked to speak to Margaret Strong, the receptionist told her that there was no one listed under that name. So she asked instead for the news editor, who came to the phone to explain that Margaret Strong did not generally work in the office, although she was indeed on the staff. She was the news correspondent for Eastern and South-eastern Europe, and spent most of her time travelling in those parts. 'She could be anywhere between Poland and Armenia,' he told Lena. 'She pops up here from time to time, but we never know when that'll be. She boots out whichever poor blighter is sitting at her desk, and then before you know it she's off again.'

'Then perhaps I might speak with the editor,' said Lena. 'It's about the article on Karl Neder.'

'Ah,' said the news editor. 'Ah, yes. Then it would be best to speak with Roy. He's really your man on that

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score.' He put her through to Battle's secretary, who asked if she had a prior arrangement for the call.

'No, but your news editor suggested…'

'You will need an arrangement.'

'Then may I make one?'

'Yes, you may.'

Lena made an arrangement.

She called Battle as agreed on the following day. His was a voice she could imagine narrating a commercial on television. Orotund, confident, well educated but not what you'd call posh. No, not a commercial – it would be presenting a current affairs programme on BBC2. The sales voices were different these days: younger, brasher, smarter, identifiably regional. The Roy Battle voice, she mused, the calm, sensible, measured voice, was in decline. These were no longer calm, sensible, measured times. Those qualities no longer had any cachet. Lena realized she was thinking like a middle-aged man, and she knew precisely which middle-aged man she was thinking like. Or rather, it was not Lena who was doing the thinking at all; her father's thoughts were accustomed to stroll casually into her mind and make themselves at home.

'I – that is, the *Observer* colour supplement – think this will make an interesting story. So you see, I need to know more about Karl Neder.'

Roy Battle's chuckle turned into a sigh as it ended.

'You'd better come over.'

Ψ

The place was not what she'd expected. Davey had told her that *Natural Science* was where all the top science stories were broken. Thanks to George Romanowicz FRS (who she did not thank), she wasn't exactly *afraid* of science, as most humanities graduates were – she knew it was as routine, as much of a career, as accounting or engineering. Oh dear, that was her father again: 'Science is really just accounting mixed with engineering. You can get a long way in understanding the world with that combination.'

In fact, she'd even done a spot of science reporting during her journalism training: an internship at *Physics*

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Bulletin on pay no union would have countenanced, excavating facts on the microelectronics industry. And she had coped rather well, which had only dismayed her – for when it came to science, Lena was determined to insist on an ignorance she did not possess. It was her defence against the humiliation she felt at not knowing more. The magazine told her to stay in touch, but she had no intention of doing that. In any case, she had said to herself, reporting on science must be a pretty meagre existence. It was dry as old leaves. It was written for the boys who built home-made rockets, not for her. It said 'Keep Out'. Oh, but that's going to change, her science-minded colleagues at City told her. They considered themselves part of an emerging new breed of science writers, who were writing not like technicians but like journalists. They wrote about sex and evolution, string theory and quantum paradoxes. They weren't interested in proselytizing for the vanished imperial fantasies of ICI, but wanted to talk about why we can't resist ice cream and chocolate, about clothes that change colour and superbikes that can reach 200 miles per hour.

Yet Davey, when she told him of her Neder-plan, found a characteristically different attraction in *Natural Science*. He'd looked up the story as promised, and then with his beachcomber's impulse had become immersed in the rest of the journal.

'Listen to this, Layn: there's a paper called "Why the Rising Moon Looks Big". What a title, eh? Haven't you ever wondered that? I've *always* wondered that. You know what most people think, if they think about it at all? They'll say it's because you see the moon against a reference frame, trees and buildings on earth, and you think, my God, it must be immense. That is, your brain thinks that. I mean, unconsciously. Then it rises, and there's no reference, so it looks its proper size. OK, so that's what they think. Well, it's wrong. Your brain doesn't say that the moon looks big relative to the trees and stuff. It says, *It looks a long, long way away*. We can judge distances, right? That's why we have two eyes, right, to get the parallax. But with the moon there's no parallax. It's too far away. And so the brain says, well, if it's that far away and still looks so big, it must be *really*

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huge. Our minds blow up what we see like it's a balloon, they make wrong assumptions about scale because we can't judge distance. And then it rises, and it doesn't look so grand at all. It all depends on our being fooled by the wrong frame of reference.'

'So we're just fooling ourselves, then?'

'Well, I suppose that's an old story. "It is the very error of the moon; she comes more near the earth than she was wont, and makes men mad."'

Lena laughed delightedly. 'I've no idea where that comes from, Davey Flint. But you were never going to be a physicist, that's for sure.'

Ψ

She had imagined *Natural Science* to be a grand institution, somewhat like the Royal Society on Carlton House Terrace where her father took her for lunch from time to time. This was the journal (according to her 1981 copy of *The Writer's Guide to British Periodicals*) that reported the discovery of the mu meson in 1936 ('Uh, most of us have yet to discover that one,' Lena murmured to herself), that had carried dispatches from Victorian geologists in Hawaii and analyses of lunar rocks returned by the Apollo missions. Countless new species of insect had been announced in its pages. Einstein himself published a short general introduction to relativity there in 1925.

So Lena was almost shocked to find that the offices of this illustrious periodical were housed in a drab building in Fetter Lane, marooned off Fleet Street while the exodus of the publishing trade gathered pace. And *Natural Science* was merely one title among many published by the Hamilton Group, whose list of journals included *The Journal of Orthopaedics, Advances in Brain Diseases* and (she could not resist browsing through a copy in the reception foyer) *Concrete Review*.

But clearly it had pride of place. *Natural Science* was the Hamilton flagship. That was evident from the Perspex-framed copies of recent covers on the walls of the elevator, which showed lasers shafting from domed observatories and slides of stained cells like bunches of glowing grapes. Yet the offices on the second floor were a

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far cry from that kind of high-tech universe. They contained mostly paper. Every desk was covered in it; some seemed to be supported by it, stacked high on the worn carpet. Filing trays were full of it. Every inch of wall space was shelved, and the shelves sagged under rows of journals, shoulder to shoulder, bound into rust-red covers labelled on their three-inch spines in plain gold lettering: *Physical Review Letters, Proceedings of the National Academy of Sciences, Philosophical Magazine*. A few people sat in front of bulky typewriters, but most were scribbling away pen in hand. They looked like science graduates rather than journalists, which is to say, they looked clever and earnest and were dressed like schoolteachers on holiday.

Roy Battle's office was worse. The paper there was bulked into formless, interleaved mountains, the remnants of collisions between tectonic stacks aeons ago. There was an old leather sofa covered in loose sheets, which Battle swept aside to make room for Lena to sit.

It wasn't really an office, more of a partition, a hastily erected box of thin plywood walls to contain the odours of his habits: chiefly port and tobacco, it seemed.

'I'd offer you coffee,' he said, 'but it's from a machine, and only fit for the staff.'

Battle loved his job. Anyone could see that. He was short, pear-shaped, and smiled a lot. His thick spectacles sent Lena searching later through her picture books of Hieronymus Bosch, the sacred texts of a Gothic adolescence, until she found the jovial red-faced demon in *The Last Judgement*. That was it – the most genial hint of brimstone, a Dickensian Faustus. His suit did not fit, or rather, his shape was not one that suits are made to hang from.

He asked his secretary to fetch what he ominously called 'the Neder files'.

'Every week,' said Battle, 'we receive letters and papers from four or five cranks. These people tend to define themselves by what they don't like, which is usually much the same: relativity, the Big Bang, Einstein. Especially Einstein, poor fellow. Look here, this is the kind of thing.' He pulled a wad of documents straight off his desk, as though he had been studying them just before

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Lena arrived.

There was a pamphlet that looked like the newsletter of a local society but which turned out to be 'Antigravity Volume XI', written by one Richard Ahlens of Ainsworth, Nebraska. 'Professor Einstein tells us that space is curved,' it announced. 'But space can be flattened too. WHAT DOES THIS MEAN?' Richard Ahlens answered that himself, with ample use of diagrams that reminded Lena of geometrical constructions endured in baffled tedium years ago: 'Bisect the angle ABC…'

'Dear Natural-Science-friends,' Dr Rüdiger Vogt of Hamburg began. 'I was a *Computer-Man* in lots of stations. I am in the Possibility to resolv every Computer-Problem. Nobody knows – *but you*.' Dr Vogt added in brackets, '(I have to go in a Hotel in Munich, where the Conditions for Analysis are better for me, concerning Problems of *Atom* and *Relativity*.).' There followed three sections, titled 'Astrophysics', 'Atomphysics' and 'Space Fligt'. It was all handwritten on the back of old flyers for a piano recital at the Hamburg Konzertsaal.

K.S. Venkatasubramanan from Jodhpur had his mind on another matter:

> *Introduce Alphabets A to Z and then give the numbers one, two, three and so on from A to Z. By adding 1 + 2 = 3, 2 + 3 = 5, 3 + 5 = 8 and likewise up to Z then we will get 294. Then multiply the Number that is 1 × 2 = 2, 2 × 3 = 6, 6 × 4 = 24 likewise up to Z. Then we will have 92901102606070746780000. By adding both we will have 92901102606070746780294. Introduce πr2. Then π = 22/7 × r^2 then we have*
>
> $$\frac{22}{7} \times (92901102606070746780294)^2$$
>
> *By concluding it we will get the figure. It is the length in Kilometers of the sky.*

But things got even stranger. The delicate hand of M. Sato of Hokkaido Medical University told the tale of 'Alice-God in Wonder-universe'. It was like a poem, beautiful and airy as Oriental silk, filled with a sense of yearning:

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We see the Alice God in Wonder-universe. The Universe is very strange, I hear the Universe is opened or sometimes closed, and has a great wall. Also I know the human resembling the god of the universe, and there is a god of anger written in the Bible.

According to the Buddhism, the big Buddha statues exist. So I imagine our earth plancton may be the body of a large person and the human may resemble a bacteria.

I will describe such an idea about the modern universe.

After several pages of this fable, M. Sato's conclusion was a cry of defiance:

In the future 21st century we may go to the outer of the universe and the inner of the universe by the vehicle with very high speed. The inner of the universe is not so pleasant because we humane are closed. We may be like bacterias in the Alice God! We should not be an Alice God's slaves. We should be free!

He had illustrated this manifesto with a diagram of the Alice God:

But even M. Sato seemed a model of lucidity next to

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Dong-yul Jeng, whose ‘Comentary’ plunged headlong into Joycean stanzas:

NUTRINO AND ANTI SPACE QUORK SUPER RELATIVE THEORY

photon is 4ev=29.9782km580/s

nutorino energy is littl of photon it isover

photon speed with in the water.

anti space quork is 0energy.speed=∞km/s

nutorino is 300000 km/s

energy=0.time isstop

nutorino is 4 electric mu tau heavy

heavy nutorino is moment 17 kev.

electric nutorino is less 0.000005Mev

mu nutorino is 0.51Mev

time is back or time is stop with anti space

quork and electric nutorino

electric nutorino and anti anti space quork

is back and stop going time for super relative theory.

‘What do you do with these things?’

‘We have a standard letter,’ Battle explained. ‘It doesn’t necessarily prevent them from sending along their next effort, but on the whole they’re simply happy to hear from us. Not all of them are so accommodating, of course.’

‘Doesn’t that worry you?’

‘Well, one wonders. We had a letter a few weeks ago from a prison psychiatrist, imploring us to look at the mathematical theories of one of his patients. The psychiatrist had got the idea that if there was anything in these ideas, his patient’s mental complication would be

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greatly eased by hearing that was so. He never mentioned what the man had done, but frankly, the pages crackled with violence. That is the only way I can describe it. Pages and pages of closely written calculations, long algebraic expressions. Very precise. And quite impenetrable. Do you know about Fermat's Last Theorem?'

'I didn't study maths.'

'It's a famous unsolved puzzle, a conjecture made by the French mathematician Pierre de Fermat in the seventeenth century, and it's about the relationship between natural numbers – that's the integers, 1, 2, 3 and so on. It's infuriatingly easy to pose, and a devil to prove.'

Lena saw sparks flash behind Battle's astronomy-grade lenses. She wondered whether she should have that cup of coffee after all.

'You *do* know Pythagoras' theorem?'

'Um… sides of triangles…'

'Exactly. For any right-angled triangle, the sum of the squares of the two shorter sides equals the sum of the square of the hypotenuse. You can put that into algebra: x squared plus y squared equals z squared. Now, there are some triangles for which this formula works with exact integers. Three, four and five, for example: three squared and four squared is nine and sixteen, which is twenty-five, which is five squared. So, Fermat wonders whether this formula will work for any integers not raised to the power two – that is, squared – but to the power three, or four, or higher. That's to say, whether there are integers that satisfy x cubed plus y cubed equals z cubed. This occurred to him while he was reading Diophantus' *Arithmetica*, and he scribbled in the margin that he had a proof that no integers satisfy this relationship for powers of three and above, but that the margin was too small for him to write it down there. Ever since, people have been trying to reconstruct this proof, but no one has succeeded.'

The door opened suddenly, and Battle's secretary entered with 'the Neder files'. She put them on the floor (there was nowhere else they could go) with a hint of disapproval. There were a lot of them.

Lena wasn't sure whether she should be taking notes. Was any of this relevant to Neder's case? Battle was acting as though he had all the time in the world, never

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mind the paper strata that were presumably awaiting his attention.

'We get, I'd say, maybe three or four proofs of Fermat's Last Theorem every month. Never from professional mathematicians – there are a few who work on it, but most avoid it. They know it's too hard. The trouble is, you can start thinking about it with nothing more than high-school algebra. So that's what people do. And they think they've cracked the problem that has baffled the greatest mathematicians of the past three centuries. No sense of proportion, these people, let alone modesty… but look, here's the Neder correspondence.'

'How do you know,' asked Lena, 'that one of these proofs is not correct?'

'We don't!' said Battle, and guffawed. 'We're not proper mathematicians. And we can't send every one of them out to referees – no one wants to touch the stuff. It's a totally thankless job. Even if, as happens sometimes, we do think a so-called proof looks serious enough to warrant peer review – that is, to be assessed by experts – and our referees come back pointing out the error, well, it gets them nowhere. We send back the criticisms, and the next week, back comes the corrected version of the paper. And the poor referee has to do it all again. So most of them won't go near it.'

'Then maybe someone has already solved Fermat's Last Theorem, but no one will take it seriously?'

'That's possible,' Battle admitted, beaming. 'I don't think it's at all likely, but it's possible. You know about Ramanujan?'

Lena glanced at Neder, waiting patiently in bundles on the floor. But Battle was oblivious.

Srinivasa Ramanujan, he explained, was an Indian clerk who in the 1910s sent pages of theorems to George Hardy, a Cambridge professor and one of the finest mathematicians in the world. 'There is no doubt that Ramanujan's package would have looked exactly like the work of a crank, for there were cranks even then,' said Battle. But Hardy glanced at the pages and saw at once that the work was extraordinary. Ramanujan seemed to have an almost supernatural talent for numbers. 'Hardy admitted that he couldn't tell if Ramanujan's proofs were

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Lena Romanowicz exposes a tale of grief and greed in a seaside village

Sally Harvey has a drawer filled with children's clothes that she will never need. 'It used to be a little indulgence, if I needed cheering up,' she says. 'I'd pop into the town and get a pretty skirt or a pair of shoes. Now I just don't know what to do with them. But I couldn't bear to chuck them out.'

Sally won't ever have a baby of her own to put into these pretty skirts. Because she has had a total abdominal hysterectomy, which removed her ovaries and her womb. Sally is one of the six thousand women diagnosed with ovarian cancer every year. Usually that's just a matter of very bad luck. But in Sally's case, it seems highly likely that she has been left unable to bear a child because she lived in the wrong place.

It's looking increasingly like a story of corporate greed and negligence. Sally isn't by any means the only cancer patient in the little coastal village of Westfold. Several of her neighbours have been treated for lung, throat and colorectal cancers over the past ten years.

'There's a definite cluster here,' says Anthony Dewdney, an epidemiologist at the University of London. And Dewdney thinks it may be no coincidence that there happens to be a waste incineration plant just two miles away. 'It's always really hard to show cause and effect in these cases,' he says. 'But if you look at the statistics, there doesn't seem to be any sign of a problem until the incinerator came along.'

Ψ

She had called Aitchison in early March.

'What do you know about this Hotel Erd? It says that special conference rates are available.'

'Don't do it,' Aitchison advised. 'It will be bedlam there.' He offered to find another place, which she gratefully accepted. She had a fleeting notion that he was

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planning to book them a double room, but she didn't think he was that sort of man. She could not imagine he was married, even. He seemed to her more like a monk, under holy vows to labour underground in the toroidal vaults of a Swiss cathedral where quantum scriptures were picked over in fanatical detail. She thought the image would amuse him no end.

And now they sat perched on his bed, because there was not even a lounge in this precise little *gasthaus* on Neuer Markt, all double glazing and moulded shower units and watercolour irises. 'You didn't seem the aesthetic type,' Aitchison told her, and she realized he meant it as a compliment. Anyhow, he was probably right.

Scattered over the coverlet were the copies she had made of the papers and letters of Karl Neder given to her by Roy Battle.

Dear Dr Battle,

My letter to you of the 20th September has surely already reached you. But no answer comes from you. You boldly go to a scandal and a ruination of your scientific career and moral reputation. I cannot comprehend it. Have you not understood that I have constructed a PERPETUUM MOBILE? It is a machine that will run without input of power. You know this, and you know what it will mean.

Tell me at least a single word. Now in Linz the story will not be as in Genoa where I have escaped from the police. Here I have no fear of the police. I give you a friendly and human advice: read my papers attentively, ruminate a little bit, put aside any other activity for a WHOLE DAY. Until that moment when the situation is in your hands I will do all possible to save your name and reputation. However, when the press will bite, the whole story will go out of my control. Be wise, Dr Battle, be wise!

Now I send you a corrected copy of my paper

ENERGETICS OF CEMENTED FARADAY DISK DEVICE

You have to print THIS COPY. The texts for the other

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two papers are as sent to you on the 29th June 1982, and as they are published in THE BITTER ROAD OF TRUTH, Vol 4.

With this paper I am aiming only 1% to show the bankruptcy of relativity. My 99% aim is to show the scientific community the difference between motional and motional-transformer inductions, because only after understanding this difference can one understand the functioning of my perpetua mobilia. I explain all with such a simple language as having to speak to children. I beg you: do not make the fool that you do not understand what I am saying.

Send me the proofs as soon as possible, Dr Battle. I still hope to win the Nobel prize for this year. Oh, if I had in my hands 3,000 dollars. And I can exclaim as Richard III in the Shakespeare drama:

THREE THOUSAND DOLLARS FOR THIS YEAR NOBEL PRIZE!

Nobody will give them to me. NOBODY. I am more sure in this than in the inevitability of nuclear war. I have only twenty days (the decision for this-year Nobel prizes are taken at the end of October). Only twenty days. Nevermind!

Awaiting for your call with the consent of publication,

Sincerely yours,
Karl Neder

Lena had taken away a copy of Battle's characteristically concise response to this one, because it seemed to her to capture the essence of their interactions:

Dear Dr Neder,

With very great regret I have to say that I cannot publish the note that you ask should be published in Natural Science, *but I do, as ever, send you my very best wishes.*

Yours sincerely,
Roy Battle

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‘Energetics of cemented Faraday disk device’ was a paper that had particularly appealed to Lena, and she had Xeroxed the entire thing. Naturally, she could make nothing of the science. Phrases such as ‘the Biot-Savart effect’ and ‘Lebedev light pressure’ were underlined, but she could find no reference to such things in any scientific encyclopaedia. ‘This effect,’ the manuscript exclaimed (‘What effect?’ thought Lena), ‘has remained unnoticed until now. This may seem incredible, but after having established that so many fundamental effects in electromagnetism have remained unnoticed, I do not become more amazed and shocked when I reveal a new huge lack in human knowledge.’

She wondered whether Neder ever imagined anyone reading this stuff. It did not seem written with a reader in mind. Mimicking the formal language of scientific discourse, it seemed in fact more of an internal dialogue. At times even that formality broke down, and then suddenly the author was telling a story:

> *The history of this effect represents a curiosity. In 1977 I was imprisoned in a psychiatry hospital in Sofia and cured by horse doses of neuroleptics (Mageptil) because of my unorthodox political thinking. In the hospital was imprisoned and forcedly cured another, obviously absolutely normal (like myself), man. He was a very able mechanician who, refusing to work for a salary in a state plant, executed special refined works on his own lathes and milling tools installed in his living room and the apartments of his relatives. He has earned good money and, evidently, the envy of his neighbours has brought him to the loony bin to be liberated of his vicious individualistic behaviour. This man asked me once in the toilet: ‘Well, Karl, if you are a physicist, explain why axle on ball-bearings rotates when current flows through it.’ I could not give an answer, and the mechanician shook his head: ‘What are they saying to the professors in the universities if they cannot explain to you such a simple thing?’ At that time I did not know that this simple experiment was unknown to the professors, as the first publication on this effect*

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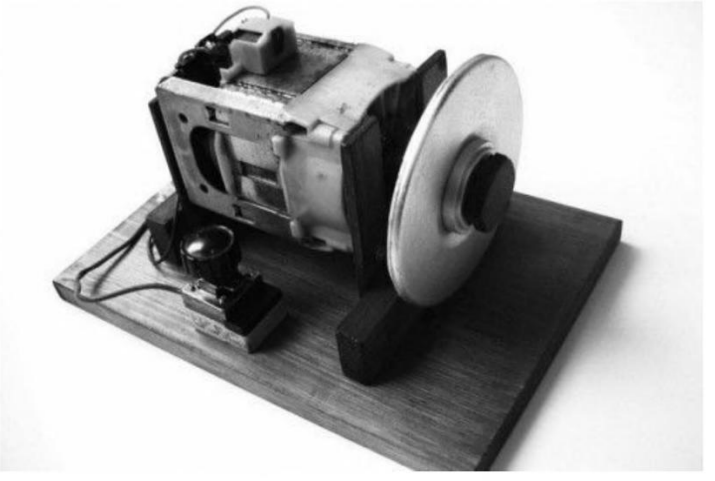
appeared a year later. Thus when this extremely important effect was discussed by the idiots in a Bulgarian psychiatric hospital, it was still not registered in the scientific annals of the physical world.

There was a detailed account of Neder's cemented Faraday disk machine, and even a photograph.



The exploded diagram showed a steel casing, and inside that a tight coil of copper wire, and within that a magnet, then bearings housed in a steel jacket, then an axle. The assembly was mounted on blocks of wood and held together with robust screws and bolts, all looking as if it was scavenged from a breaker's yard.

Wires trailed from it, a drip-feed tangle of lifelines. But which way, really, did the essence flow: to or from this squat, shiny device? That, Lena suspected, was quite important.

The machine was called EDEN: Energizer Discovered in Europe by Neder. He had built it, he said, at the Laboratory for Fundamental Problems in Wipplingerstrasse, Linz. And it ran forever.

At least, it *would* do, as Neder explained.

The measurements show clearly that the machine creates energy from nothing. But as at the reachable rate of rotation the tension produced by the generator minus the back tension of the motor is still less than

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eventually a humble car motor is driving a hierarchy of spinning machines that produce enough power to sustain the whole of Austria. Oh, quite terrible.' His grin was now at full stretch.

This, he explained, was in effect perpetual motion, and his tone implied that he equated it with something like original sin. Energy unlimited, perpetual motion: it was all the same, apparently. Energy from nothing. If a machine creates more energy than it consumes, you can use it to drive itself, and it will go on spinning forever, a self-contained little universe of motion.

'Well, here's what I don't get,' said Lena. 'Didn't Galileo say that things will move forever anyway, if there's nothing to stop them?' A piece of high-school physics that had always puzzled her, and she had refused to ask her father for an explanation.

'Yes, but that isn't perpetual motion,' said Aitchison. 'What it all comes down to is the conservation of energy. The total energy of the universe is finite.'

'Hang on. Who says so?'

'It's the First Law of Thermodynamics,' the capitals audible.

'OK, but that's just a name. How do we know it's true?'

'Oh, such a good question. Are you sure you're not just playing the ingénue, Lena? If only one's students had the gumption to ask these things once in a while. The whole of thermodynamics – you could say the whole of physics – is predicated on this law, so if it's wrong, the fabric of physics crumbles. But you're right, in a sense, to say "So what?" There's no proof – in a way it's experimentally unprovable. All our theories demand the First Law, and it has never been seen to be violated, but that's not the same as a proof. It's an article of faith.'

He was still beaming. Lena suspected that nothing would delight Aitchison more than the demolition of some fundamental principle of science. She began to think that the reason he went to fringe conferences was partly in the hope of finding a genuine challenge to well-established physical law.

'Do you want to know a secret?' he asked.

Again this suggestive intimacy, this monkish flirtation. She couldn't resist colluding. 'Ooh, yes!'

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‘The universe does give us something for nothing. All the time. Then it takes it back again at once!’

Lena waited.

‘Quantum uncertainty, you see. It allows – you might say it compels – particles to pop into existence, out of nothing, out of sheer vacuum. As long as they live no longer than the limits of quantum uncertainty, which is a shorter time than a man can have any conception of. Or a young woman, presumably. Not just next to nothing, but as close to it as you can imagine getting. And not just one particle, but two – they’re always paired. A particle and its mirror image, its anti-particle. They appear out of the quantum vacuum, and in an instant they see each other and embrace’ (Why that metaphor? Did Aitchison know his own mind? she wondered) ‘– and *fzzzz!*, they disappear again. But their mutual destruction produces energy, a photon, a particle of light. So the vacuum is filled with this energy, this fizzing. And here’s the best part – in theory, this energy should overwhelm everything else in the universe! It should tear it all apart! Ha ha ha!’

‘So the theory is wrong, then?’

‘Incomplete, one might say. A little reminder that one doesn’t know everything. But the splendid irony is that this vacuum energy is not available to Karl Neder, because he denies the veracity of quantum physics. How wonderful! The man who wants infinite energy, and he refuses to take it where physics is at its most vulnerable.’ Aitchison was red with mirth, but Lena could detect no trace of malice in it.

‘But look, look, a man can get carried away. Your original question, then. Yes, Galileo said that a body in motion would move forever if no forces acted on it. But you see, that’s not the same as perpetual motion, except, ah, semantically, because it doesn’t violate the First Law. Energy is neither created nor destroyed. The energy of motion, that is, the kinetic energy of the body, stays always the same. Now, in reality this is never seen. Even a body moving through interstellar space feels distant gravitational forces, it collides with atoms and molecules in the tenuous gas between the stars, and each collision imparts a little drag, a little friction. All the time, energy is being dissipated, in however small an amount. That’s

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the thing, you see. No change happens without energy being dissipated, converted to heat. That, by the way, is the Second Law of Thermodynamics, in a manner of speaking. And these two laws together point to one thing, as the physicist Clausius recognized last century, and that is the heat death of the universe. So you see, some of these perpetual motion chaps have a notion that they are going to save not only the world, but the universe.'

By my half-a-century experimental and theoretical work I showed the following (see references in my twelve books, 60 refereed papers, eight paid advertisements, and numerous papers and editor's comments in the journal NEUE PHYSIK edited by me):

1. The principle of relativity is wrong. *Indeed, I measured three times optico-mechanically and once electromagnetically the Earth's absolute velocity. Its magnitude is 350 km sec* $^{-1}$ *with equatorial coordinates of its apex* $\delta = -20^{\circ}$, $\alpha = 12^{h}$ *(approx.).*

2. The principle of equivalence is wrong. *Indeed, my interferometric 'coupled mirrors' experiment which was carried out during a year showed that when the laboratory's acceleration was kinematic, the laboratory's velocity changed, while when it was dynamic there was no change.*

3. The energy conservation law is wrong. *My machines COL-BAR, MOMOT and EDEN violated this law. Only because of lack of money I could not close the energetic circle in the first two, but the third one was less expensive and I shall run it soon as a perpetuum mobile. The day when I shall present this machine at a press conference will be the start-day for an earthquake in conventional physics, when many centuries-old dogmas shall be renounced and many saints de-sainted.*

4. Displacement current does not exist. *At the age of 19 I understood that displacement current is a phantasmagoria and presented to my teacher in*

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surely lay. He had covered his tracks with a confusion of signs and symbols.

'I'll tell you what worries me,' said Lena. 'I have to write this article, but I take one look at Neder's papers and books, and I don't understand a word. He says he's made a perpetual motion machine, and then he starts to explain it, and I can't get past the first sentence. I don't know what he's saying.'

'That's a deeply sane response.'

'You think Neder is mad?'

'Hmm. Ask a doctor. He's certainly obsessed. The point is that you realize it's right to give up trying to extract any sense from this material.'

'I don't have any choice. And anyway, that doesn't help me. The thing is, he's published these sixty or so papers, and they must have something to say, but I don't know what it is.'

'It's very hard to tell, even for a physicist. This isn't ignorance on your part, or not simply that, if you'll excuse that way of putting it. The general propositions contained in these texts are clear enough: energy conservation can be violated, and relativity and quantum mechanics are wrong. But when you start to look at the arguments, frankly they're more than a person can follow. That isn't a matter of insufficient scientific expertise, you understand – there's no possibility that one is being outpaced by genius, you mustn't imagine anything of that sort. The physicist can pick out any equation from these papers and books' – he reached for the manuscript – 'and see what it means. Look here, for instance.'

Under Aitchison's finger was a cluster of symbols:

$$B_{\omega rad} = \frac{\underline{k}^2}{r} e^{ikr} \boldsymbol{n} \times \boldsymbol{d}_{\omega}$$

'Now, this is disheartening, isn't it? But you see, all he wants to express is that there is a way of calculating the strength and direction of a magnetic field a certain distance away from a particle that has an electrical charge. Good. There's no problem with that. But then this formula leads to another, and then another, and you have to keep your wits about you to recall what "d" is, and "k", and you have to remember to keep asking, "Is this

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‘Space-Time Absoluteness!’

‘Absolutely – oh, beg pardon.’

‘But I still don’t understand what that means. I’m just latching onto the word.’

‘OK. Think of it like this. According to Newton’s laws of motion – Isaac Newton, yes? Good. So, these laws assume you can draw a grid in space, like on a map, and then give everything a grid reference. And an object is motionless when it doesn’t move relative to this grid. And the clock ticks identically everywhere – ten past seven on Earth is, so to speak, also ten past seven on Mars, and in a distant galaxy. This is absolute space and time. What Lorentz was saying was that absolute stillness was defined relative to the ether: things are perfectly at rest when they don’t move with respect to the ether. And that’s where Einstein comes in.’

Lena was now scribbling a little desperately in bad shorthand. The assignment felt impossible, yet Aitchison seemed to regard her story as a fait accompli to which he need only add the finishing touches. She began to feel she was being handed an obligation.

‘Einstein continued in the direction Lorentz had started, but with one important difference. He did away with the ether. He used Lorentz’s maths, but instead of absolute space and time, he proposed a new absolute: the speed of light. That, he said, was the one thing that never changes, whether the light is launched from a streetlamp or a rocket travelling at thousands of miles per hour. You can’t add anything to the speed of light simply by sending it from a moving body. It is always the same. Now there’s supposing for you! And that was special relativity.’

‘What was special about it?’

‘It was special because it was only about relative motion, about uniformly moving bodies. Later he saw what it implied about the structure of space itself, and that was general relativity, which was all about bodies accelerating and moving under gravity. But, you see, the point is that Einstein was inspired to develop relativity by the theory of electromagnetism. That’s where it starts. He even called his key paper “On the electrodynamics of moving bodies”, and he started it by talking about the difficulties with Maxwell’s theory. He wasn’t thinking

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Yes, she'd read the letters. Battle was playing a peculiar game, although it wasn't clear that he recognized it himself.

Dear Dr Neder,

I have reviewed your paper myself, and enclose a list of my specific questions and concerns. Please do understand that there are no circumstances in which I could ask one of our small army of dedicated but unpaid referees to take on this task, because your manuscript begins (deliberately I'm sure) with the inflammatory statement of your theory of absolute space-time.

Let me say that I have great sympathy with your frustration, even despair; but I must tell you frankly how your intellectual position must seem to the outside world. You are persuaded that special relativity is wrong, but your conviction is based on a single experiment carried out in Austria and not afterwards repeated (for financial reasons which I understand). In your 'Coup de Grace' paper, you also outline a number of theoretical formulations which, to be honest, I do not understand.

Nowhere in the huge correspondence between us have I detected a trace of awareness on your part of the enormity of the point you wish to establish. Special relativity sprang from contradictions of electromagnetism at the end of the nineteenth century, was recognized in 1905 as a valid amendment to Newton's mechanics and has since been shown to be (1) consistent with general relativity, a local approximation if you like, and (2) amply confirmed by, for example, the accelerator experiments which show that the energy of a particle increases with its velocity as $1/\sqrt{(1-v^2/c^2)}$*. Relativity has been used to open unexpected avenues of enquiry, such as Dirac's relativistic quantum mechanics (and the existence of the positron).*

You ask the world to give up all this on the strength of a single experiment, and because you say so! But unlike Jesus Christ and others successful at changing

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But this too was a dying trade, as Lena knew when she bought her electronic typewriter with its digital memory, however pitifully small and short-lived that was. The silicon recall of these devices was growing by the week. Before long, they would hold entire documents, books, libraries; Remingtons with minds of their own. Hot metal was doomed by cold silicon, anyone could see that. Even the strikers at Wapping could see that, and it was why they had fought with the police and the press chiefs that winter with such sad and bitter fury.

Wapping was just another conflagration in a country that had come to seem tinder-dry. And Lena was living in one of the most flammable zones, as she'd discovered one weekend last September. *Open Channel* had called her in to subedit news for the whole of Saturday, which meant a bleary 6.30 start with the moon still hanging overhead. All day in the frantic office she collated the stories as they were filed, gave them a rough edit for grammar and spelling, and dispatched the proofs up the road to be transformed into a crude paste-up, awaiting her attentions in the evening. It was intense, head-down work, and no hint of the uproar in South London reached her desk. So she was mystified and irritated when, at a quarter past midnight, the last tube to Brixton pulled in at Stockwell and refused to advance any further. 'Brixton's closed,' the station guard mumbled as he pulled the grilles across the entrance. 'Some kind of trouble.' The scattering of late-night passengers emerged dazed into the night, and the most alert of them snapped up any taxis that happened to be idling in Stockwell at that unfriendly hour. A short walk home, then, and if South London was not an ideal place for young women to wander alone in the dark, midnight was still early enough in Brixton's shifted time zone to offer some safety in numbers.

But the crowds that night were not revellers, not clubbers drifting in the dissolute orbit of the pills-and-dance dens, not dealers or buyers or pushers or pullers. Brixton had become unhinged. Night creatures ran down the streets, some wearing masks of panic, others laughing or taking loping, loose strides like animals set free. Even the policemen were running, and they wore the armour that was now, in these days of unrest, coming to seem like

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their standard uniform. Helmeted and shielded like troops at Poitiers, with batons as blunted broadswords. One of them demanded to know where Lena was going. 'Home.' Where had she been? 'At work.' Wasn't that the London equation: Day = Work, Night = Home? The policeman was not convinced. He seemed to have forgotten the formula. But in haste he passed on.

Sirens voiced their mindless alarm, and Lena felt as though she had wandered into London's collective memory, into the trauma of forty years earlier. London at war.

And that's what it was. She saw it when she reached Brixton Road, and found the place in flames.

Shops had been ransacked, their glass fronts now jagged maws ready to consume the consumer. Groups of young men were carrying away the casualties of the raids: television sets, hi-fi stacks, anything that made a noise when it was plugged in. Just beyond the tube station, the road itself was barred: a barricade had been constructed from the hulks of shattered cars, disgorging fluorescent streamers of fire and turbid, toxic smoke. Londoners had forgotten what to do amidst such scenes, and they improvised as best they could. Here and there, gangs hurled missiles, sometimes at knots of policemen but sometimes just into the night, as though warding off demons that prowled beyond the firelight. Pieces of brick and slate rained down, objects tore blazing trails across the sky: an urban meteor shower. The policemen clustered and conferred; they would launch charges, clumsy and encumbered with their see-through rectangular shields, only to find the space emptied as the night absorbed their quarry.

Now Lena, protected only by her improbability, was scared. Here was a place where violence had lost touch with motive. That happened in war zones. Killing could become just another activity, like smoking or breaking windows. A random act, something that occurred merely because it could.

There on Brixton Road, Lena understood that the world was not partitioned into good and bad, safe and dangerous. This city too could become a wasteland, a blasted and savage place, as harsh and alien as the

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crater-faced moon.

Ψ

'That's the spirit. You see my point, then?'

'There's a gaping hole in the piece.'

You couldn't write an article about a wayward, controversial, vagabond scientist without putting him at the centre of it. Without even having met him. Yes, she knew that. That, she said, was why she was heading back east.

'Ah. Fantastic. I know it can be hard to track down characters like this. Of course I see that, Lena. But we'll pay your expenses – I mean, on the understanding that we do publish this thing in the end, naturally. It's a nice story, I'm quite sure about that.' She thought he sounded a little like he was trying to convince himself. Was she blowing it already?

'OK, Tim. I'll do my best. I may need another few weeks.'

'End of April then, that's perfect. There's no rush. You do see my point, don't you? We've got to hear from him. That's playing to your strengths, Lena. I can see you're good with the personal stuff. That's why we want you to do this for us.' Either he was remembering his manners, or he had not yet given up on that lunch.

Ψ

Lena knew that she had not suddenly decided to head back in search of Neder just to appease Tim Evers and cling onto her assignment. She knew this was a great opportunity, but she didn't kid herself that it was going to be career-changing. No, she suspected that she'd simply been waiting for Tim to prompt her towards something she'd otherwise feel unable to justify to herself.

She had pinned a page from one of Neder's papers on her wall, frowning at the thought that this was a slightly unhinged thing to do. The symbols revealed nothing to her, and now she knew that the equations might not even be correct. But they had begun to represent something quite unconnected to their ostensible function. 'Here I stand,' she whispered. 'Here I stand.' A heretic's defiance:

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