

# THE FEYNMAN SALTATION

Charles Sheffield

*The worm in the apple; the crab in the walnut.* Colin Trantham was adding fine black bristles to the crab's jointed legs when the nurse called him into the office.

He glanced at his watch as he entered. "An hour and a quarter the first time. Forty minutes the second. Now he sees me in nine minutes. Are you trying to tell me something?"

The nurse did not reply, and Dr. James Wollaston, a pudgy fifty-year-old with a small mouth and the face of a petulant baby, did not smile. He gestured to a chair, and waited until Trantham was seated on the other side of his desk.

"Let me dispose of the main point, then we can chat." Wollaston was totally lacking in bedside manner, which was one of the reasons that Colin Trantham liked him. "We have one more test result to come, but there's little doubt as to what it will show. You have a tumor in your left occipital lobe. That's the bad news. The good news is that it's quite operable."

"Quite?"

"Sorry. Completely operable. We should get the whole thing." He stared at Trantham. "You don't seem surprised by this."

Colin pushed the drawing across the table: the beautifully detailed little crab, sitting in one end of the shelled walnut. "I'm not an idiot. I've been reading and thinking cancer for weeks. I suppose it's too much to hope it might be benign?"

"I'm afraid so. It is malignant. But it appears to be primary site. There are no other signs of tumors anywhere in your body."

"Wonderful. So I only have cancer *once* ." Trantham folded the drawing and tucked it away in his jacket breast pocket. "Am I supposed to be pleased?"

Wollaston did not answer. He was consulting a desk calendar and comparing it with a typed sheet. "Friday is the twenty-third. I would like you in the night before, so we can operate early."

"I was supposed to go to Toronto this weekend. I have to sign a contract for a set of interior murals."

"Postpone it."

"Good. I was afraid you'd say cancel."

"Postpone it for four weeks." Wollaston was pulling another folder from the side drawer of his desk. "I propose to get you Hugo Hemsley. He and I have already talked. He's the best surgeon east of the Rockies, but he has his little ways. He'll want to know every symptom you've had from day one before he'll pick up a scalpel. How's the headache?"

The neurologist's calm was damping Colin's internal hysteria. "About the same. Worst in the morning."

"That is typical. Your first symptom was colored lights across your field of vision, sixty-three days ago. Describe that to me . . ."

The muffled thump on the door was perfunctory, a relic of the days when Colin Trantham had a live-in girlfriend. Julia Trantham entered with a case in one hand and a loaded paper bag held to her chest with the other, pushing the door open with her foot and backing through.

"Grab this before I drop it." She turned and nodded down at the bag. "Bought it before I thought to ask. You allowed to drink?"

"I didn't ask, either." Colin examined the label on the bottle. "Moving up in the world. You don't get a *Grands Echézeaux* of this vintage for less than sixty bucks."

"Seventy-two plus tax. When did you memorize the wine catalog?"

"I'm feeling bright these days. When a man knows he is to be hanged in a fortnight, it concentrates his mind wonderfully."

"No points for that. Everybody quotes Johnson." Julia Trantham pulled the cork and sniffed it, while her brother was reaching up into the cabinet for two eight-ounce glasses.

"You're late." Colin Trantham placed the thin-stemmed goblets on the table and watched as Julia poured, a thin stream of dark red wine. His sister's face was calm, but the tremor in her hand was not. "The plane was on time. You went to see Wollaston, didn't you, before you came here?"

"You're too smart for your own good. I did."

"What did you find out?"

Julia Trantham took a deep breath. Colin had always been able to see through her lies; it would be a mistake to try one now. "It's a glioblastoma. A neuroglia cell tumor. And it's Type Four. Which means—

"I know what it means. As malignant as you can get."

Colin Trantham picked up his glass, emptied it in four gulps, and walked over to stand at the sink and stare out of the kitchen window. "Christ. You still have the knack of getting the truth out of people, don't you? I had my little interview with Dr. Hemsley, but he didn't get as honest as that. He talked *procedure*. Day after tomorrow he saws open my skull, digs in between the hemispheres, and cuts out a lump of my brain as big as a tennis ball. Local anesthetic—he wants me conscious while he operates."

"Probably wants you to hold tools for him. Like helping to change a car tire. Sounds minor."

"Minor for *him*. He gets five thousand bucks for a morning's work. And it's not *his* brain."

"Minor operation equals operation on somebody else."

"One point for that. Wish it weren't *my* brain, either. It's my second favorite organ."

"No points—that's Woody Allen in *Sleeper*. You're all quotes today."

Colin Trantham sat down slowly at the kitchen table. “I’m trying, Julia. It’s just not . . . easy.”

The casual brother-sister jousting shattered and fell away from between them like a brittle screen. Julia Trantham dropped into the seat opposite. “I know, Colin. It’s not easy. It’s awful. My fault. I’m not handling this well.”

“Not your fault. Everybody’s. Mine too, same problem. You go through life, build your social responses. Then you get a situation they just don’t cover. Who wants to talk about *dying*, for Christ’s sake?” There was a long silence, but the tension was gone. Colin Trantham stared at his older sister’s familiar face, unseen for half a year. “I’m scared, Julie. I lie awake at night, and I think, I won’t make old bones.”

*Little brother, hurt and crying. We’re grown-ups now. We haven’t hugged in twenty years.* “Social responses. I’m supposed to say, don’t be scared, Col, you’ll be fine. But while I say it I’m thinking, you’re scared, no shit? Of course you’re scared. Me, I’d be petrified. *I am petrified.*”

“Will you stay until the operation’s over?”

“I was planning to. If it’s all right with you, I’ll hang around until you’re out of the hospital. Write up a paper on extinct invertebrates that I’ve had in the mill for a while.” She poured again into both glasses, emptying the bottle. “Any girlfriend that I need to know about, before I embarrass her by my drying panty-hose?”

“Rachel. Just a now-and-again thing.” Colin Trantham picked up the empty bottle and stared at the layer of sediment left in the bottom, divining his future. “Should we have decanted it? I hardly tasted that first glass. I’ll try to sip it this time with due reverence.” The raw emotion was fading, the fence of casual responses moving back into position. “No problem with Rachel. If she finds you here with me I’ll just pretend you’re my sister.”

The waiting room was empty. Julia dithered on the threshold, possessed by conflicting desires. She wanted news, as soon as it was available. She also wanted a cigarette, more than she had ever wanted one, but smoking was forbidden anywhere in the hospital.

Dr. Wollaston solved her problem before she could. He approached along the corridor behind her and spoke at once: “Good news. It went as well as it possibly could go.”

The nicotine urge was blotted out by a rush of relief.

“Minimum time in the operating room,” the neurologist went on. “No complications.” He actually summoned a smile. “Sedated now, but he wanted you to see this. He said that you would know exactly what it means.”

He held out a piece of paper about five inches square. At its center, in blue ink, a little figure of a hedgehog leered out at Julia, cheeks bulging. She could feel her own cheeks burning. “That’s me—according to Colin. Private family joke.”

“Drawn *rightafter* the operation, when Hemsley was testing motor skills. Astonishing, I thought.”

“Can I see him?”

“If you wish, although he might not recognize you at the moment. He should be sleeping. Also”—a second of hesitation, picking words carefully—“I would appreciate a few minutes of your time. Perhaps a

glass of wine, after what I know has been a trying day for you. This is”—Julia sensed another infinitesimal pause—“primarily medical matters. I need to talk to you about your brother.”

How could she refuse? Walking to the wine bar, Julia realized that he had talked her out of seeing Colin, without seeming to do so. Typical James Wollaston, according to Colin. Gruff, sometimes grumpy; but smart.

His eyes were on her as they settled in on the round cushioned stools across a fake hogshead table, and she took out and lit a cigarette.

“How many of those a day?”

“Five or six.” Julia took one puff and laid down the burning cigarette in the ashtray. “Except I’m like every other person who smokes five—a pack lasts me a day and a half.”

“You’re going to regret it. It’s murder on your skin. Another ten years and you’ll look like a prune.”

“Skin? I thought you were going to tell me about my heart and lungs.”

“For maximum effect, you have to hit where it’s least expected. You ought to give it up.”

“I was going to. I really was. But you know what happened? Since Mother died, Colin and I have called each other every week.”

“Sunday midday.”

“That’s right. How’d you know?”

“I know a lot about you and Colin.”

“Then you know Colin’s not one for overstatement. He hadn’t said a word about . . . all this. When the evidence was in, he hit me with it all at once. It floored me. I’d got up that morning determined that I was through, that was *it* for cigarettes. I’d just thrown a near-full pack away.” She laughed shakily. “Looks like I picked a hell of a day to quit smoking.”

“That’s from *Airplane* . No points, I think your brother would say.”

“My God. You really do know a lot about us.”

“When it was clear to me that Colin might have a serious problem, I put him through my biggest battery of tests, checking his memory and his reflexes and his logical processes. We also went over all his background. As a result I know a great deal about you, too, your background, what you do.” He paused. “I even understood about the hedgehog, though it didn’t seem the best time and place to mention it. Anyway, how’s the paleontology business?”

“Just scratching out a living. Sorry. Programmed response. In a very interesting state. You see, every few years there’s a major upheaval—facts, or theories. New radioactive dating, punctuated equilibrium, Cretaceous extinctions, mitochondrial DNA tracking, the reinterpretation of the Burgess Shale. Well, it seems were in for another one. A biggie.”

“So I have heard.”

“You have? Well, not from Colin, that’s for sure.”

“True. I read it”

“Fossils bore him stiff. He says that *Megatherium* was an Irish woman mathematician.”

A moment’s thought. “Meg O’Theorem?”

“That’s her. He was all set to be a mathematician or a physicist himself, till the drawing and painting bug took hold. He’s the talented one, you know—I’m just the one who wrote papers and stayed in college forever. Anyway, first he started to paint in the evenings, and then—” She stopped, drew breath, and shook her head. “Sorry, doctor. I’m babbling. Nerves. You wanted to talk.”

“I do. But I like to listen, too—unless you’re in a big hurry?”

“Nothing in the world to do but sit here and listen.”

Wollaston nodded. The wine had arrived and he was frowning at the label. “I hope this isn’t too lowbrow. It’s certainly not one of the *grandcrus* that you and your brother like to sample. It’s a naive domestic burgundy without any breeding, but I think you’ll be amused—”

“—by its presumption. No points. But I get one for finishing the line.”

“I need practice, or I’ll never be a match for the two of you.” He poured the first splash of wine, and in that instant seemed to become a younger and more vulnerable person. “A successful operation. That was the first stage. It is now behind us. Did your brother discuss with you what might happen next?”

Julia shook her head. Colin had not raised the subject, nor had she. Somehow it had not seemed significant before the operation. “Chemotherapy?”

“Not with the conventional anti-metabolites. They have difficulty crossing the blood-brain barrier. The normal next step would be radiation. But a glioblastoma is fiercely malignant. Bad odds. I want to try something that I hope will be a lot better. However, I wanted to obtain your reaction before I discussed it with Colin.” Another pause, words chosen carefully. Julia nodded her internal approval. A good, cautious doctor. “I’d like to put him onto an experimental protocol,” continued Wollaston. “An implanted drug-release device inside the brain itself, with a completely new drug, a variable delivery rate, and an internal monitor sensitive enough to respond to selected ambient neurotransmitter levels. It’s tiny, and there will be no need to reopen the skull to install it.”

He was not looking at her. Why not? “Price isn’t an issue, Dr. Wollaston, unless it’s out of this world. We have insurance and money. What are the side effects?”

“No consistent patterns. This is too new. And the implant would be done free, since your brother would be part of a controlled experiment. But”—the kicker, here it came, he was finally looking into her eyes—“Colin would have to fly to Europe to get it. You see, it’s not yet FDA approved.”

“He’d have to *stay there*?”

His surprise was comical. “Stay there? Of course not. He could fly over one night, have the implant performed the next day, and as soon as the surgeon there approved his release he’d turn right around and come back. But I’m not sure how Colin will react to the idea. What do you think? It’s doesn’t have FDA approval, you see, so—”

“I don’t think. *I know*. Colin doesn’t give a tinker’s damn about the FDA. He’ll do it.” Julia stubbed out her cigarette, which had burned its whole length unnoticed in the ashtray. “Of course he’ll do it. Colin wants to live.”

She took a first sip of wine, then two big gulps. “What next?”

“On medical matters? Nothing. I’m done. More wine. Relax. Your turn to talk.” He was smiling again. “I hope you don’t have to run off right away.” Julia was staring all around her. His smile vanished. “Do you?”

Julia was still scanning the wine bar. “Where are all the waiters? You know, I didn’t eat one thing all day. I’m absolutely famished. How do you order food in this place?”

Walking back to Colin’s apartment through the mellow April evening, Julia Trantham was filled with guilt. Ten hours ago a malignant tumor the size and shape of a Bartlett pear had been removed from the brain of her brother. He was lying unconscious, gravely ill. While she . . .

For the past three hours she had managed to forget Colin’s condition—and in the company of James Wollaston she had enjoyed herself hugely.

Concorde, Heathrow to Dulles; seventy thousand feet, supersonic over open ocean.

Colin Trantham sat brooding in a left-side window seat, staring out at blue-black sky and sunlit cloud tops.

The plane was half-empty, with no one between him and the aisle. Occasional curious looks from flight attendants and other passengers did not bother him. He was beyond that, accepting their stares as normal, just as he accepted the head bandages and bristly sprouting hair. If his appearance were enough to stir curiosity, what would people say if they knew what sat *inside* his head?

Maybe they would be as unimpressed as he had been. Colin had been shown the device before its insertion, and seen nothing to suggest its powers: a swollen iridescent disk no bigger than his fingernail, surrounded by the hollow legs of sensors and drug delivery system. Super-beetle. An unlikely candidate to be his savior. He felt nothing, but according to the London doctors it had set to work at once. The battle was going on now. Deep within his skull, bloated with slow poison, the scarab was stinging the crab’s microstases in silent conflict.

And the chance that it would succeed? No one would give him odds. Bad sign.

*“Make a note of thoughts that strike you as unusual.”*

Wollaston, on their last meeting before Colin flew to England, had maintained his imperturbability. “We can watch your stomach at work, or your gall bladder. But you’re the only one who knows how normally your brain is functioning. Record your dreams.”

“*Mydreams?* Doctor Wollaston, even before I got sick, my dreams never made much sense.”

“They don’t have to. Remember what Havelock Ellis said: ‘Dreams are real while they last; can we say more of life?’ I want to know about them.”

Colin was beginning to agree. Dreams and life, life and dreams; he had felt like telling Wollaston that his whole life had become one waking dream, on that morning when a headache came and grew and would not go. Since then nothing had been real. The pain had gone with the operation, but in its place was a continuous foreboding. *Never glad confident morning again*. He did not recall a real dream of any kind since the operation. And he did not want to write notes on his condition; he wanted it never to have happened.

The flight attendant had paused by Colin's row of seats and was staring at him questioningly. He did not want to talk to her; to avoid it he stared again out of the window. The sun was visible in the dark sky, farther toward the rear of the plane. At Mach Two they were outpacing it. Time was running backwards. *Call back yesterday, bid time return .*

Colin shivered at a slow stir of movement, deep within his brain. Something there was waking from long sleep. He stared straight at the sun. His pupils contracted, his hands relaxed. Fully awake, he began to dream.

*I was standing on a flat shore, watching the sea. Or maybe I was sitting, I can't tell because I had no sense of feeling of legs and arms. I just knew I was there. Enjoying the sunshine on my bareback, feeling good. More than good, absolutely terrific. Cold, perfect day, I could feel the blood running in my veins. Something must have died a mile or so offshore, or maybe it was a school of fish, because thousands of flying things were swooping and turning and settling. I decided I would swim out there and see for myself . . .*

Julia Trantham looked up from the third sheet. "Does it just go on like this for all the rest? Because if it does, I can't help. It's not specific enough."

"I know." Wollaston nodded. "It would have been nice if you could have said, hey, that's where we spent my fourteenth summer. But I didn't expect it would ring any particular bells. Keep reading, if you would—I want you to have the context for something else."

"And I thought you asked me here for dinner."

He did not reply. She went on in silence until she reached the last page, then looked up with raised eyebrows. "So?"

He took four pages of 20" × 14" unlined paper from a folder and slid them across the table. "Colin found what he had written as unsatisfactory as you do. He says he's an artist, not a writer. Pictures, not words. What do you make of these?"

The drawings were sepia ink on white background. Julia glanced for a few seconds at the first couple of sheets and put them aside, but the other two occupied her for a long time. James Wollaston watched her closely but did not speak or move.

"If you tell me these are all Colin's, I'll have to accept that they are." She tapped the first two pages, spread out on the table of Wollaston's dining room. "But these ones sure don't look like it."

"Why not?"

"Not detailed enough." She picked up one of the sheets. "When you ask Colin to draw something, he draws it *exactly* . It's not that he lacks imagination, but he never cheats. Once he's seen it, he can draw it. And he sees more than you or I."

"He didn't see these. He dreamed them."

"You're the one who's been telling me that dreams are as real as anything else. Anyway, compare the first two pages with the others. These must be birds, because they're flying. But they're cartoon birds, vague wings and bodies and heads, almost as though Colin didn't care what they looked like. And now look at these other two, the tidal shellfish and crabs and worms. Precise. Every joint and every hair drawn in. See this? It's *Pecten jacobaeus* —a scallop. Look at the eyes on the fringed mantle. You could use it as a textbook illustration. That's Colin's trademark. Same with the two lugworms. You can

tell they're different species. But those first two pages are just *wrong* ." She paused. "You don't see it, do you?"

"I can't argue with you." Wollaston stared at the pages as though he were seeing them for the first time. He had taken off his tie and draped it over a chair back, and now he picked it up and rolled it around his fore-fingers.

"But you don't like it," said Julia, "what I said about the first two sheets?"

"I do not."

"It's a bad sign?"

"I don't know. I know it's not a *good* sign. In Colin's situation the best change in behavior is no change."

"Do you think it's coming back?"

"I'd love to say, no, of course not. But I don't know. God, I hate to keep saying it to you. I don't know, I don't know. But it's the truth." He came closer, half a step nearer than convention permitted. "Julia, I wish *I could* say something more definite. It could be the treatment—new drug, new protocol, new delivery system."

"But you don't think it is."

"I think these drawings may be the effects of the treatment." He slid the sheets back into the folder. "But they're not the whole story. I go more by look and sound and sense. My gut feel says it's something more than side effects. I think Colin has problems. How long are you staying?"

"I've been wondering. I could stay the whole summer. It's late to do it, but if I moved fast I could even make part of next year a sabbatical. Should I?"

She was tense, hearing the question behind the question, not sure she wanted to hear the answer.

"I think you should." James Wollaston looked more miserable than an objective physician had a right to look. "I think you should stay, until—Well, stay as long as you can."

The northern bedroom of the ground-floor apartment had been converted to a studio, its bare expanse of window looking out onto a paved courtyard where weeds pushed up between cracked stones. The studio lay at the end of a corridor, far from the entrance to the apartment. Julia stood and listened as she came through the front door.

Total silence. That was odd. For the past three months her arrival had always produced a call of "Hi!" and a quick appearance in the kitchen to discuss dinner plans. He must be really deep into his work.

She slipped off her shoes and stole along the corridor.

Colin was in the studio, standing at the easel with his back half-turned to her. He was working in acrylics, and she saw a vivid flash of colors on the big board. She studied him as she came in. The hair on the back of his head had regrown completely, it must be two inches long now; but he was terribly thin, just gaunt bones, and the skin on his temple had a pale, translucent look. She saw that the food on the tray table beyond the easel was untouched. He must have eaten nothing since she left, over ten hours ago.

“Col?”

He did not seem to hear. He was painting furiously, brush strokes as rapid and sure as they had ever been. She came to his shoulder to examine the picture, but before she reached the easel she glanced up at his face. His gray eyes were unnaturally bright, and there was a smile of exquisite pleasure on his gaunt face. But it was not for Julia. He did not know that she was there. He was smiling away into some private space.

“Colin!” She touched his arm, suddenly frightened. The brushstrokes faltered, the moving hand slowed. He blinked, frowned, and turned toward her.

“Julie—” he said. “I’m through one barrier. It’s wonderful, but now there’s another. Bigger. I can’t see a way past it yet.” His hand jerked up and down, a quick chopping movement with the paintbrush. “Like a wall. If I can just get through this one . . .”

The expression of ecstasy was replaced by surprise. He swayed and groaned, his lips drawing back from his teeth. Julia saw his gums, pale and bloodless, and the veinless white of his eyes. The brush fell to the floor. She grabbed for his arm, but before she could catch him he had crumpled forward, pawing at the painting and easel before falling heavily on top of them.

“I don’t care *what you* tell Colin. I want your prognosis, no matter how bad it looks.”

It was long after working hours. Julia Trantham was sitting at one end of the uncomfortable vinyl-covered couch in the doctor’s reception room. Her face was as pale as her brother’s had been, twenty-four hours earlier.

“At the moment Colin doesn’t want to hear anything. Doesn’t seem to care. That’s not as unusual as you might think.” Wollaston had been standing, but now he came to sit next to her. “People hide from bad news.”

“And *it is* bad news. Isn’t it?”

“It’s very bad. And it’s not a surprise.” He sighed and leaned his head back on the smooth yellow seatback. At dinner he had switched to martinis instead of the usual wine. Julia could see the difference. He was more talkative than usual, and he needed her to be an audience.

“I wonder what it will be like a hundred years from now,” he went on. “The physicians will look back and think we were like medieval barbers, trying to practice medicine without the tools. All the cancer treatments except surgery are based on the same principle: do something that kills the patient, and hope it kills the cancer a bit faster. The anti-metabolite drugs—like the ones in Colin’s implant—kill cancer cells when the cells divide. But a few resistant ones survive, and they go on and multiply. I’ve seen it a thousand times. You start chemotherapy, and at first the patient does well, wonderfully well. Then over the months . . . the slip back starts.”

“That’s what’s happened to Colin—even with this new experimental treatment?”

He was nodding, eyes closed and the back of his head still against the couch. “Experimental treatments are like lotteries. You have to play to win. But you don’t win very often.” He reached out blind and groped for her hand. “I’m sorry, Julia. We’re not winning. It’s back. Growing *fast* . I can’t believe the change since the last CAT scan.”

“How long, Jim?”

“I don’t know. Pretty quick. Colin can come out of the hospital if he wants to; keeping him in won’t help.

A hospice might be better. A day or two, a few weeks, a month. Nobody knows.”

“And there’s no other treatment you can try?”

He said nothing. Julia stared across at the wall, where Wollaston had hung one of Colin’s post-operative drawings, a lightning sketch of half a dozen lines that was clearly a picture of some kind of bird feeding her chick, the beak inside the little one’s gaping bill and halfway down its throat.

“When did Colin draw the picture on the wall there?”

“About two weeks ago.” Wollaston stirred. “It’s wonderful, isn’t it? Have you seen all the others—the ones he’s done since the operation?”

“I haven’t seen any. It’s a habit we got into years ago. I wouldn’t look at Colin’s work when he was getting ready for a show or a delivery until the end, then I’d give him my opinion of the whole thing. He didn’t like me in his studio.”

“Maybe it’s just as well. Some of the recent ones have been . . . strange.”

“You mean he’s losing his technique? God, to Colin that would be worse than dying.”

“No. The *technique* is terrific. But the animals don’t look right. For instance, he drew a pair of seals. But their flippers were *toodeveloped*, too much like real legs. And there was one of a zebra, except it wasn’t quite a zebra, more like a funny okapi. I wondered at first if the pictures could tell me something about what’s going on in Colin’s head, but they haven’t. I’d say he’s feeling strange, so he’s drawing strange.” He patted her hand. “I know, Julia, ‘Colin draws just what he sees,’ don’t say it.”

“Real legs, you say? And there’s *swing claws* on that bird, that’s what’s odd. But it’s not a baby hoactzin.”

The hand was pulled from his. There was a rapid movement of the couch next to him. Wollaston opened his eyes. “Julia?”

But she was no longer by his side. She was over at the wall, gazing with total concentration at Colin’s drawing. When she turned, her mouth was an open o of confusion and surmise.

“There they are.” Julia Trantham patted a stack of papers, boards and canvases. They were in Wollaston’s office, with the big wooden desk swept clear and the table lamp on its highest setting. “Every one we could find. But instead of grouping according to medium and size, the way you usually would, I’ve rearranged them to chronological order. There are eighty-nine pictures here, all signed and dated. The top one is the first drawing that Colin made when he was flying back from England. The last one is the painting he was working on in his studio when he passed out. I want you to look through the whole stack before you say anything.”

“If you say so.” James Wollaston was humoring her, knowing she had been under terrible stress for months. It was close to midnight, and they had spent the last hour collecting Colin Trantham’s pictures, pulling them from medical records and apartment and studio. Julia would not tell him what game she was playing, but he could see that to her it was far more than a game. He started carefully through the heap: pen and ink drawings, charcoal sketches, oils and acrylics and pencils.

“Well?” Julia was too impatient to wait for him to finish. She was staring at him expectantly, although he was on only the tenth picture.

“Did he always draw nothing but nature scenes?” said Wollaston. “Just plants and animals?” He was

staring at sheet after sheet.

“Mostly. Colin is a top biological illustrator. Why?”

“You insist he drew from life, from what he had seen. But in these pictures that doesn’t seem to be true.”

“Why not?” Julia pounced on him with the question.

“Well, I recognize the first drawings, and they’re terrific. But this”—he held out the board he was examining—“it looks wrong.”

“It’s not wrong. That’s *Castoroidinae*— a rodent, a sort of beaver. Keep going. What’s that one?”

“Damned if I know. Like a cross between a horse and a dog—as though Colin started by drawing a horse’s head, then when he got to the body and legs he changed his mind.”

“You were right about the horse. That’s *Hyracotherium* . To the life. *Keep going* .”

But Wollaston had paused. “Are you sure? It looks strange to me, and I have a pretty good grounding in comparative anatomy.”

“I’m sure you do.” Julia took a painting from the stack. They were less than halfway through the heap. Her hands were trembling. “*Current anatomy*, Jim. But I specialize in *paleo* -anatomy. Colin has been drawing real plants and animals. The only thing is, some of them are extinct. *Castoroidinae* was a giant beaver, big as a bear. It was around during the Pleistocene. *Hyracotherium*’s a forerunner of the horse; it flourished during the Lower Eocene, forty or fifty million years ago. These pictures are consistent with our best understanding of their anatomy based on the fossil record.”

She was shaking, but Wollaston did not share her excitement. “I’ll take your word for it, Julia. But I want to point out that none of this is too surprising, given your own interests and the work you do.”

“That’s not true!” Julia fumbled out a cigarette, lit it, and inhaled hard enough to shrivel the bottom of her lungs. “It’s more than surprising, it’s *astounding* . I told you the first time we had a drink together, what I do bores Colin stiff. He doesn’t know beans about it and he doesn’t care. There’s *no way* he got these drawings from me. And do you realize that these pictures are in *reverse chronological order*? Fossil dating is a tricky business, I’m the first to admit that; but in this set, the more recently Colin did them, the older the forms represented.”

“What are you *saying*, Julia?” The concern in Wollaston’s voice was for sister more than brother. “If you’re suggesting . . . what it sounds like you’re suggesting, then it’s nonsense. And there’s a perfectly rational explanation.”

“Like what?”

He reached forward, removed the cigarette from her fingers, and stubbed it out. “Julia, the longer you study the human brain, the more astonishing it seems. You say that what you do bores Colin. Probably true. But do you think that means he didn’t even hear you, when you talked and talked paleontology all these years? Do you think he never picked up one of your books? They’re scattered all over the apartment, I’ve seen them there myself. It’s no wonder you recognize what Colin has been painting because you put all those ideas into his head *yourself* .”

“I didn’t, Jim. I know I didn’t. And here’s why.” She was turning the stack, moving down towards the bottom. “Now we’re beyond the KIT barrier—the time of the Late Cretaceous extinction. See this?”

The painting was in subdued oils, browns and ochers and dark greens, crowded with detail. The viewpoint was low to the ground, peering up through a screen of ferns. In the clearing beyond the leafy cover crouched three scaly animals, staring at a group of four others advancing from the left. The sun was low, casting long shadows to the right, and there was a hint of morning ground mist still present to soften outlines.

“Saurischians. Coelurosaurs, I’d say, and not very big ones.” Julia pointed to the three animals in the foreground. “The pictures we were looking at before were all Tertiary or later. But everything beyond that is Cretaceous or *earlier*. I’d place this one as middle Jurassic, a hundred and sixty million years ago. No birds, no flowering plants. I know those three animals—but the four behind them are completely new to me. I’ve never seen anything like them. If I had to guess I’d say they’re a form of small hadrosaur, some unknown midget relative of *Orthomerus*. That flat hulk, way over in the background, is probably a crocodile. But look at the detail on the coelurosaurs, Jim. I couldn’t have told Colin all that—I couldn’t even have *imagined* it. Look at the scales and wrinkles and pleats in the mouth pouch, look at the eyes and the saw-toothed brow ridges—I’ve never seen those on any illustration, anywhere. The vegetation fits, too, all gymnosperms, cycads and ginkgos and conifers.”

James Wollaston laughed, but there was no suggestion from his face that he found anything funny. He was sure that Julia Trantham was practicing her own form of denial, of reality avoidance. “Julia, if you came in to see me as a patient and said all that, I’d refer you for immediate testing. Listen to yourself!”

But she had moved to the final drawing, smeared where Colin Trantham had fallen on top of it before it was dry. “And this is earlier yet.” She was talking quietly, and not to Wollaston. He stared at her hopelessly.

“Something like *Rutiodon*, one of the phytosaurs. But a different jaw. And there on the left is *Desmatosuchus*, one of the aëtosaurus. I don’t recognize that other one, but it has mammalian characteristics.” She looked up. “My God, we must be back near the beginning of the Triassic. Over two hundred million years. These are thecodonts, the original dinosaur root stock. He’s jumping further and further! Jim, I’m scared.”

He reached out for her, and she clung to him and buried her face in his jacket. But her words were perfectly clear: “First thing in the morning, I’ve got to see Colin.”

What James Wollaston had heard with incredulity, Colin Trantham listened to with a remote and dreamy interest. Julia had taken one look at him, and known that no matter what the neurologist might say Colin would never be leaving the hospital. It was not the IV’s, or the bluish pallor of his face. It was something else, an impalpable smell in the air of the room that made her look at her brother and see the skull beneath the skin.

Whatever it was, he seemed oblivious to it. He was grinning, staring at her and beyond her, his face filled with the same ecstasy that she had seen in the studio. His conversation faded in and out, at one moment perfectly rational, the next jumping off in some wild direction.

“Very interesting. The implant and the drugs, of course, that’s what’s doing it. Has to be.” From his tone he might have been talking of a treatment applied to some casual acquaintance. “Did you know, Julia, if I were a bird I’d be in much better shape than I am now? Good old Hemsley operated on me, and he got most of it. But he must have missed a little bit—a bit too much for the implant to handle. Poor little scarab, can’t beat the crab. But if I’d been a *bird*, they could have cut away the whole of both cerebral

hemispheres, and I'd be as good as ever. Or nearly as good. Wouldn't know how to build a nest, of course, but who needs that?"

And then suddenly he was laughing, a gasping laugh that racked his chest and shook the tubes leading into his fleshless arms.

"Colin!" The fear that curiosity had held at bay came flooding back, and Julia was terrified. "I'll get the nurse."

"I'm fine." He stopped the strained laughter as quickly as he had started it and his face went calm.

"Better than fine. But I'm a robot now. I, Robot."

She stared at him in horror, convinced that the final disintegration of mind was at hand.

"You know what I mean, Julie." Now he sounded rational but impatient. "Don't go stupid on me. Remember what Feynman said, in physics you can look on any positron as an electron that's traveling backward in time. You tell me I've been jumping backward—"

"Jim says that's nonsense. He says I'm talking through my hat."

"Jim?"

"Dr. Wollaston."

"So it's *Jim*, is it. And how long has that been going on?" He narrowed his eyes and peered up at her slyly. "Well, you tell Jim that I agree with you. I'm going backwards, and I can prove it. And according to Feynman that means the electrons in my brain are positrons. I've got *apositronic brain*. Get it?" He laughed again, slapping his skinny hands on the bedsheets. "Positronic brain. I'm a robot!"

"Colin, I'm getting the nurse. Right now." Julia had already pressed the button, but no one had appeared.

"In a minute. And you know *how* I can prove it? I can prove it because I feel absolutely wonderful;"

His face had filled again with that strange bliss. He reached out and held her hand. "Remember how it felt when you were four years old, and you woke up in the morning, and you knew it was your birthday? That's how it used to be, all the time for all of us. But ontogeny recapitulates phylogeny: immature forms pass through the evolutionary stages of their ancestors. And that applies to *feelings* as well as bodies. Little kids feel the way all the animals used to feel, a long time ago. That's the way I am when I'm there. Fantastic, marvelous. And the further I go, the better it gets. You looked at my pictures. If I've been going back, how far did I get?"

Julia hesitated. She was torn. Half of her wanted to believe her brother, to see more of those marvelously detailed drawings and to analyze them. The other half told her she was dealing with a mind already hopelessly twisted by disease.

"Your last picture shows the period of the earliest dinosaurs. They're all thecodonts, nothing that most people would recognize. The fossil record is very spotty there. We don't know nearly as much about them as we'd like to."

"And what would be next—going backward, I mean?"

"The Permian. No dinosaurs. And at this end of the Permian, over ninety percent of all the life-forms on earth died off. We don't know why."

He was nodding. “The barrier. I can feel it, you know, when I’m trying to jump. I went through one, when all the dinosaurs died off. This one is bigger. I’ve been trying to fight my way through. I’m nearly there, but it’s taking every bit of energy I have.”

“Col, anything that tires you or upsets you is *bad* . You need rest. Why are you climbing imaginary walls?”

“You don’t know the feeling. If I could jump all the way back, right to the first spark of life, I bet the intensity of life force and joy would be just about too much to stand. I’m going there, Julie. Across the barrier, into the Permian, all the way to the beginning. And I’m never coming back. *Never* .”

As though on cue, the thin body arched up from the bed, arms flailing. The mouth widened to a rictus of infernal torment and breath came hoarse and loud. Julia cried out, just as the nurse appeared. Wollaston was right behind her.

“Grand mal.” He was bending over Colin, grabbing at a rubber spatula and pushing it into the mouth just as the teeth clenched down. “Hold this, nurse, we don’t want him swallowing his tongue.”

But the spasm ended as quickly as it had started. Colin Trantham lay totally at ease, his breath slow and easy. His face smoothed, and the fixed grin faded. In its place came a look of infinite calm and blissful peace.

“Dr. Wollaston!” The nurse was watching the monitors, her hand on Cohn’s pulse. “Dr. Wollaston, we have arrhythmia. Becoming fainter.”

Wollaston had the hypodermic with its six-inch needle in his hand, the syringe already filled. It was poised above Colin Trantham’s chest when he caught Julia’s eye.

She shook her head. “No, Jim. Please. Not for one month more pain.”

He hesitated, finally nodded, and stepped away from the bed.

“Dr. Wollaston.” The nurse looked up, sensing that she had missed something important but not sure what. She was still holding Colin Trantham’s wrist. “I can’t help him. He’s going, doctor. He’s going.”

Julia Trantham moved to grip her brother’s other hand in both of hers.

“He is,” she said. “He’s going.” She leaned forward, to stare down into open eyes that still sparkled with a surprised joy. “He’s going. And I’d give anything to know where.”