Lawrence Weschler

Paradoxes of Form and Freedom In Narrative Non-Fiction

{A four-session mini-course}

Readings Packet

Lawrence Weschler
The Fiction of Nonfiction
{Form & Freedom}

Week One (Form)
Dave Eggers, "Impressions" from *McSweeney's* (first issue)
John McPhee, "Los Angeles Against the Mountains" (Part I)
Ian Frazier, "Canal Street"

Week Two (Form)
Susan Sheehan, A Missing Plane (Part II)
Lawrence Weschler, "My Grandfather's Last Tale"
Ernst Toch, Letter to a would-be composer

Week Three (Freedom)
Grace Paley, "A Conversation with My Father"
Wyslawa Szymborska, "Could Have"
Stanislaw Lem, "Impossibilitate Vitae" from *A Perfect Vacuum*
Ellen Pall, "Painting Life into Sammy"
Ian Frazier, "Nobody better, Better than Nobody" (Heloise)
Passage from Chapter 10 of *Family*
*Lawrence Weschler, Breytenbach profile from *Calamities of Exile*

Week Four (Bringing it all together)
*Joseph Mitchell, "Joe Gould's Secret" from *Up in the Old Hotel*

*all texts in the readings packet except
Weschler, Calamities of Exile and
Mitchell, Up in the Old Hotel
(books to be procured separately)

Lawrence Weschler
The Fiction of Nonfiction
{Form & Freedom}

Week One (Form)

Dave Eggers, "Impressions"
from McSweeney's (first issue)

John McPhee, "Los Angeles Against the Mountains"
(Part I)

Ian Frazier, "Canal Street"

BECAUSE THERE IS STILL SO MUCH MISUNDERSTANDING, THERE IS:

TIMOTHY
MCSWEENEY'S
QUARTERLY CONCERN.

(FOR SHORT SAY "MCSWEENEY'S.")
KNOWN ALSO AS
"GEGENSHEIN."

Also answering to the names:
"THE STARRED REVIEW";
"THE MIXED REVIEW";
"THE GRIM FERRYMAN";
"THE PRIMITIVE";
"MCSWEENEY'S: DIAMONDS ARE FOREVER";
and
"CONDÉ NAST MCSWEENEY'S FOR WOMEN."

To you we say:

WELCOME TO OUR BUNKER!

LIGHT A CANDLE, WATCH YOUR HEAD AND— WHO, US? WELL, OKAY... AHEM:

Believing in: INDULGENCE AS ITS OWN STICKY, STRONG-SMELLING REWARD;
Trusting in: THE TIME-HONORED BREAD SAUCE OF THE HAPPY ENDING;
Eschewing: THE RECENT WORK OF SAUL BELLOW;
Waiting for: THE LIKELY SECOND COMING OF OLAF PALME;
Still thinking about: HOW THE LOCKOUT WILL AFFECT THE NBA'S LONG-TERM FAN BASE;
Relying on: STRENGTH IN NUMBERS, PROVIDED THOSE NUMBERS ARE VERY, VERY SMALL;
Hoping for: REDEMPTION THROUGH FUTILITY;
Dedicated to: STAMPING OUT SANS SERIF FONTS; *and*
CREATED *in honor of and named for*

Mr. T. Mc.

a troubled fellow, an outsider, a probable genius of indeterminate age, who wrote endlessly, recklessly to the editor's dear mother, born ADELAIDE MCSWEENEY, *pleading, in tortured notes in the margins of postal brochures, for help with his medical bills, transportation costs — put simply, he wanted attention, some consideration, an attentive ear and also, perhaps — perchance, to dream! — re-admittance into the* MCSWEENEY FAMILY, *prominent in Boston, the members of which, however — however! — did then and do now, to this day, blithely deny any knowledge of* TIMOTHY's *existence.* Well!

FOR HIM AND FOR YOU WE PRESENT THIS, WHICH INCLUDES STORIES INVOLVING THE FOLLOWING SUBJECT MATTERS: SOLDIERS DYING; GOLD MINING; SPIDERS; HAWAII; KISSING; ROMANIA; TELEVISION; SUNKEN TREASURE; FIRE.

OUR MOTTO:

"WE MEAN NO HARM."

CREATED IN DARKNESS BY TROUBLED AMERICANS.
PRINTED IN ICELAND.
1998

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IT STARTED WITH AN ASSIGNMENT FROM A CERTAIN AWARD-LADEN MAGAZINE CONCERNED WITH ENJOYING THE OUTDOORS AND LOOKING GREAT DOING IT. BUT SOMEWHERE ALONG THE LINE, THINGS WENT HORRIBLY, HORRIBLY WRONG. NOW THERE IS THIS:

"IMPRESSIONS"

OF A LIFE VERY, VERY DIFFERENT FROM OUR OWN, HALF A WORLD AWAY, IF NOT FARTHER, DEPENDING ON WHERE YOU LEAVE FROM:

AN EGYPTIAN REMEMBRANCE.*

(OR, NOTES AND COMPLAINTS FROM A COLICKY CHILD)

by Stephen J. Shalit (a.k.a David Eggers)

I.
(SOME OF SUBMITTED)

AT ANY DECENT New Age bookstore, there will be an entire wall devoted to what is known as "Egyptology," populated by books with titles like *Pyramid Odyssey, Initiation into the Pyramids*, and *Pyramid Power* (purportedly the "#1 Bestseller on Pyramid Energies"). Inside each book, the author concerns himself first with extolling the incredible powers of the pyramids and the pyramidal shape (besides

II.
(DIFFERENT STORY)

JUNE 20

PLANE FROM SFO connects in London with Romanian Airlines flight 502, a red-eye, though no one sleeps. American movies play all night — *That Darn Cat, Fools Rush In,* starring Salma Hayek, in a breakthrough role. During the wee hours, there are fully three duty-free sell-a-thons, with the flight attendants traipsing up and back, pushing the cart full of... things — I have no idea what duty-free means, really — with as much success the third time, at about 5 a.m., as the sessions at mid-

III.
(CURRENTLY)

Fun coincidence: author is writing this in a state-of-art office building in midtown Manhattan, though ha ha the air conditioning is not working in the middle of August, creating climatic conditions not unlike those experienced in Cairo in July. Author has a fan. The fan blows the picture of Phil Gramm he has pinned up on the bulletin board behind his desk, which he thought was funny for a moment or two

time-travel, they are useful in something known as "healing" and also "razor-sharpening"); next with scornfully debunking the conventional wisdom of the pyramids' purpose and origin (notions such as that they were built by ancient Egyptians as tombs for their kings); and finally with outlining, with remarkable confidence, their own theories. A man named Edgar Cayce, sometimes referred to as "the world's greatest psychic," has posited that the pyramids are much older than the 4,700 years most archaeologists assume, and were built not merely by Egyptians, not as tombs, but by a consortium of ancient Egyptians and *Russians*, as a storage space for the history of humankind. Another faction, headed by "expert in religious practices" Manley Hall, claims that the pyramids were built by none other than the residents of Atlantis ("Atlanteans") who, fearing impending doom for their civilization, rose from the sea (presumably), came to Egypt (naturally) and built the pyramids as

night and 2 a.m. Romanians may be a lot of things, but they're no fools when it comes to grabbing a bargain-priced bottle of scotch.

Later: sunrise, with oceanic clouds.

Once in Romania, there are twelve hours between connection to Cairo; I take a shuttle to Bucharest. Roadside dense with American advertising, and invitations for foreign investment. Says one: "ROA BUSINESS CENTER: THE PLACE OF THE MOST PROFITABLE BUSINESS BY PRIVATIZATION!" Chuckle. It's funny when foreign people are eager to please us, but are simply too dumb to do so. Drizzly. Ramshackle, overgrown, verdant. Bucharest, which guidebook says was once known as the "Paris of the East," has apparently seen better days. Paris, yes. Like Paris covered in mud.

Oh, kidding. Nice city. Nice place. Noted: half of women in Bucharest have, naturally, that usually artificial rust-colored hair that people pay money for in U.S. Sitting on steps of Teatro Nacional, at 8 am, eating bread and orange juice, watching Romanians walking to work, rushing around, as if it matters. Hard not to chuckle again, this time heartily. Ha, ha, ho. Relax, people — it's *Romania*!

As Bucharestians continue to pass by, busily to and fro, disturbing trend

eleven months ago, when he moved into the office, but which shortly thereafter lost its charm, then became an annoyance, then became strangely innocuous — though new visitors would still ask about it, forcing him each time to come up with some despairing attempt at cleverity — and somehow (how, really?) the thing has resisted removal, and is now blowing in the wind from the fan.

Know what? Phil Gramm's teeth are fucking amazing.

Author would rather be talking on the phone. Author wonders who he might be able to call, given it is 3:43 am on a Saturday. Someone on the West Coast? Would he sound desperate, or lonely? Both?

He wishes he were not at office writing this article. He has broken article up into sections to maintain his interest, and to demonstrate just how "Out of the Box" he is able to think, but even so, even while knowing he is making history here, changing the course of everything and influencing brittle foreign markets, he wishes article could be completed

receptacles for their rich history. Others have suggested that the Great Pyramid was originally a "giant sundial," or a "giant water pump." One theory has it that the pyramids aren't man-made structures at all, but the remains of extinct volcanoes. Then there are those who, doubtful that ancient men could have built monuments of such incredible size and architectural genius, insist that the pyramids were created entirely by, or with at least some help from, aliens.

Whatever their theories and motivations, for thousands of years tourists have been flocking to Egypt's pyramids, with the country's most famous examples, those at Giza, now hosting about 4-5 million people yearly. They're probably the world's oldest and perhaps most famous tourist destination, and their status as such is not likely to change anytime soon, in part because in March, after many years of on-again, off-again restoration work on the long-neglected Sphinx — it's been buttressed by

becomes apparent: Bucharestians are not noticing presence of important journalist from major American magazine with great demos and focus on outdoors. Look at envoy from America! Writing interesting notes in journal! *Look, Romanian dopes!*

Museums closed. Seen: stray dogs, Backstreet Boys posters, lesbian couples, openly holding hands in park, city prettier when clouds break up. Not seen: black people, bicycles.

Back at airport, friendly Israeli man says Romanian soldiers are everywhere because of unfortunate and apparently unexpected presence at same time of Israeli and Egyptian military personnel, both en route to points south. Tell Israeli man about nature of travel — about being far-flung journalist, envoy from America, writing interesting notes in journal, reporting article about presence of New Agers at pyramids of Egypt, for eventual publication in award-winning magazine with great demos and focus on the outdoors. Israeli man listens, then says he does not believe in "New Age" sorts of things. A minute later, Israeli man tells story about how he was in Romania looking for his father's tomb, which he had never seen, and of which no one knew the location. Undeterred, he had gotten off the train in a random and small Romanian village, and without directions

in such a way that he would not be required to do the actual typing and thinking necessary. He wants to dictate article to an assistant. He wants to type up his notes. He wants to take a break and read *Entertainment Weekly.*

He calls United Airlines to check fares to San Francisco in December, when he will be attending the wedding of a former girlfriend. When the airline representative quotes a fare that seems too high, he asks her if there is anything he can do to bring the fare down: She says no, there is not. Why is it so high? he wonders to her. Is it because of the holidays? Pause. She breathes out loudly, exasperated. Listen, she says, I don't know why it's what it is. It just is. He is taken aback, physically — he jerks his head from the receiver and looks at it, as if it has given an electric shock to him, as if a film director was in his office, filming a movie about him at his desk calling the airline representative, and has just directed him to look at the phone, taken aback."Look like someone just said something simply unbe*lie*vable to

scaffolding for almost 20(TK) years — the government will announce that the restoration is complete, the scaffolding will come down, and that perhaps the best-known half-man/half-beast (CHEAP GAG HERE?) on Earth is restored and safe from further harm. A huge celebration is being planned, and for it and after, the Egyptian tourist authority expects even larger crowds.

TRANSITION

In person, the Sphinx, like all stars of Hollywood and treasures of antiquity, is smaller than you expect. It is about the size of a ferryboat, and is positively dwarfed by the pyramids that rise in the distance behind it. It is raggedly beautiful, though, even with the slipshod and weatherbeaten wooden scaffolding all around it. The size of the pyramids, however, is not disappointing. In contrast to, say, city skyscrapers which, because of all their glass and polished steel, seem lighter than they are, the pyramids wear their weight flagrantly. They are so solid and massive that it seems

or a map or an address, had walked straight to the cemetery and, once there, had walked directly to the grave of his father.

Whew!

While waiting for flight, read, for the first time, actual articles printed in magazine about outdoors with great demos, and slowly realize, with a sickening, sinking feeling, that award-wining magazine about outdoors reads as if written by lead-poisoned children. Kidding! Exaggeration. Ha ha. Maybe it's just some of the articles. Maybe not. What will these people do with golden eggs laid by this journalist? Better not to think. Big, resigned sigh.

JULY 21

Customs, then drive from Cairo airport to Cairo Sheraton. Highway median filled with families picnicking on the narrow stretches of grass. Children run about, parents sit on blankets, prepare and eat food. Heartwarming, but odd, because it's midnight.

Why? cab driver is asked.

The heat, he says. Stay inside during the day, he says.

JULY 22

Apparently a holiday of some sort. Pivotal figure in story, director of pyramids, Dr. Zahi Hawass, not in office today. Meet guides, Hesham and Seham (sp?), provided by Egyptian

you. Jerk your head back and look at the receiver, as if having been given an electric shock. Yeah, that's it, just like that!"— that's what the director might say. Given the urgency of the material, it would probably be a white-hot young director like Michael Bay. Michael Bay is the future of filmmaking. He's also great-looking.

Speaking of potential movies — Stephen Glass. Author, being sleep-deprived and ill-informed, has been thinking lately that Stephen Glass is — and author can be quoted on this — the "Ollie North of journalism." Has been thinking that it is both too bad but then again, completely fitting, that Glass was given the roasting that he was, tarred and feathered the way he was, burnt with cigarette butts, taken apart, dismembered like the Scarecrow in *The Wizard of Oz*, wondered about in exasperated voices, made funny, funny jokes about, written bemusedly about in salmon-tinted newspapers with extensive real estate coverage.

It *was* fun. But you know, just beneath the smiles and frivolity of tens of thou-

incredible that they wouldn't at some point just fall straight through the earth.

Briefly about the Great Pyramid of Cheops: Made of about 2,300,000 large stone blocks (they're bigger than you might think, most between 3 and 15 tons and chest-high), it originally rose 481 feet in the air. The removal by thieves and/or erosion of the apex have reduced that to about 450 feet, which still makes for a really gigantic pile of rocks (PLS CHANGE). Next to the Great Pyramid is that of the son of Cheops, King Chephren, which is almost as large, and has the added advantage of having retained, on its apex at least, some of the casing stones that originally covered each of the pyramids, making their surfaces smooth, as opposed to the stair-step look to which we're accustomed. Next to Chephren is the smaller pyramid of Mycerinus, which few people seem to care much about.

(TRANSITION)

The scene on the Giza plateau is typical of Tourist Authority. Hesham is about 28, and wears khakis and a dress shirt. Seham is 30 and wears a sari. Both are attentive and eager, though seem to have been misinformed about their guest's intentions in Cairo. Try to explain the concept of New Agers, and the New Agers' interest in the pyramids, how the story was sent to Egypt to "get," is about the presence of these New Agers at Giza, and the program, engineered by Dr. Hawass, that allows interested groups after-hours access to pyramids for an hourly fee. Hesham and Seham are bewildered. They have never heard of such a thing. This is either a good sign — a story little-known even here! — or a very, very bad sign. Guides direct informative tour through crumbling Old Cairo, where people live worse than rats. Heat like slow suffocation.

JULY 23 (MORNING)

Call Seham about getting in touch with Dr. Hawass. Dr. Hawass? Not today, she says. Dr. Hawass is in Pennsylvania. He'll be back on Saturday, two days hence.

Fine, better get started on some "background." First trip to Giza plateau, where wait outside pyramids, looking for New Age-seeming sorts. Luck is poor. Interview anyone looking vaguely English-speaking. Interview anyone

sands of journalists in black jeans and leather boots or khakis and good shoes was something else, something dark and sinister and terrifying, like new albums by John Melloncamp: Fear. Tens of thousands of journalists were shaking, albeit undetectably, in their black jeans and khakis. Not all journalists. Some. Feature writers. Columnists. "Aces," if you will. The guys who can both deliver a story and do so with great style, the people who seem to always "get" the story, who always deliver something with verve and panache and the great quotes and perfect "arc." The writers who have nice writing contracts at glossies that pay well and no one reads, or have columns at major newspapers that pay decently and are read distractedly on trains. What separates these women and men, these — what's that term we're using again? — "aces," right, tight, from the drones who write about city council meetings and the do's and don'ts of men's apparel? Part of it is sheer writing ability, yes, turns of phrase and such, sure, sure. But then,

that on any comparable tourist-friendly wonder of the world — chaos. Most of the action takes place on the road that runs between Cheops and Chepren, where most of the tour buses park. At any one time, from about 11 to 2 every day, there can be up to 15 of them , buses, parking, turning, honking, and unloading or packing up their well-fed and heavy-sweating cargo. The arrival of each new bus brings a cloud of dust, and the descending upon it of a new team of local capitalists. For each bus there are four to five Egyptian vendors hawking their wares — men offering horse or camel rides, teenagers with packages of cheap postcards, children with buckets of cold drinks. Each disembarkation yields an explosion of possible transactions, with the vendors and camel-ride offerers literally circling their prospective customers, barking out a barrage of near-frantic sales pitches.

The tourists act their part, and wander around bewildered, taking pictures, fending off the salesmen, following their wearing anything vaguely whimsical. As most visitors only spend 20-30 minutes at the pyramids, I quickly become a fixture. Clear sky, sun screams directly above. Not fun at all. Starting to feel like work, which is a problem during a junket. Heat is interesting. Heat is fun to think about. Heat is at first paralyzing, then, strangely, ennobling.

JULY 23 (AFTERNOON)
Perched on a dune off of Mycerinus, feeling reflective. Diarrhea this morning. Afternoon of second day, maybe early evening, sun dropping, pyramids looking extremely postcard-like. They *are* big. Wonderfully quiet away from the parking lots, and buses and tourists and vendors, near Cheops. Vendors climb dune to attempt sale of Fanta to journalist. Say no to two vendors, then acquiesce when boy of about 7 rides tiny donkey 200 yards down dune and up again to offer soda. Tip him, he nods, crawls back onto donkey, into sunset. Really. In distance horses ride into Sahara. *Black Stallion. Lawrence of Arabia.* Have not talked to sister in months. Wonder if hotel gets ESPN. Wonder if hotel bill would indicate adult movie-charges. Sand is fine.

JULY 23
Talk with assistant of Dr. Hawass, who delivers bad news: No, no — no New Agers now. New Agers though, there is something else. There is another factor, and we will call that factor the "G-Spot" factor. The "G-Spot" factor is possessed by the writers who, for one reason or another, always seem to come back with the story, and also something more. They are sent out, they do the reporting and, by dangitty dang-nabbit, they, hmmm, *always get the story!* Not that they just go out and report the events. No, no, that's newspapet stuff. We're talking about going somewhere, doing the interviews and observations, and then — pow! — there is, like magic, all at once: meaning, timing, relevance, symbolism, great quotes, amazing characters, telling details, and the perfect ending. Are they blessed? Lucky? Or...

Let us heat a true-life anecdote related by a friend, a few days ago. It will delight and inform:

(Relater of anecdote is talented young journalist with writing contracts at two or three glossy magazines — happily, for us, much like Young Mr. Glass.) Recently, for one of such magazines, he went on

guides into the entrance of whichever pyramid their tour has promised to take them. They buy their tickets (about £15), and chatter excitedly as they walk up (Cheops) or down (Chephren) into the tombs. Ten minutes later, however, they exit noticeably more subdued, looking wilted and weary, as if they've been exercising in a sauna, fully clothed.

Which is precisely what they have done. Whatever the temperature outside — this was August, mind you; my guess was 102 — it is easily twenty degrees hotter inside. As they exit the tomb, and snap a few last pictures, the bus driver is already blowing his whistle, urging them back on the bus. Dutifully they shuffle their way toward the dazzling promise of air-conditioning and velour-covered seats, and then they're gone. They do not linger.

CALLBACK TO NEW AGE THEME

I sat for a day outside Cheops, interviewing people as they exited. I wanted to know if they felt any "energy" inside, come in the spring and fall.

So, there are no groups here now? There are no groups who have scheduled time in the pyramids, time to chant and be New Agey?

Oh, no, no. No reservations until October.

Assistant from outdoors magazine with great demos had made arrangements, had done research. Editor from outdoors magazine, editor who does not answer phone, had made arrangements. But the story that was supposed to be in Egypt is not currently in Egypt. But journalist is.

JULY 24

Outdoors magazine editor, who is called repeatedly and is eventually tracked down at editor's friend's house, listens to status and then chuckles — chuckle, chuckle — about "misunderstanding" with regard to arrangements; in context, uses the words: "too bad." Suggests "salvaging" a story, perhaps find a different "story" in Egypt. Journalist wonders if taking red-eye to Santa Fe and strangling editor in his sleep would make a good story. (Maybe, but it would depend on the execution.)

JULY 25

On third day, journalist thinks he has a story: All Egyptians are money-grubbing vermin. Wonders whether about viability of such a story. Wonders if people will use that "xenoblah-blah" word on him. assignment, came back, wrote story, turned story in. Then silence. Silence is bad. Editor calls. Hmm. Well. Story is put on hold. Editors at magazine do not think there is much of a "story" there. "There does not seem to be much of a story there," they say. "Well," young writer answers, "that is the story that was there. No more, no less. No, there were no shootings while there, no illicit sexual acts, no suicides or big controversies. There was just this thing, a group of people doing this particular thing, which I feel I related well, and which I think is significant, admittedly in a smallish way, and is interesting to read about, while of course not exactly the makings of a movie..." Etc. The editor listens. The writer asks if the story will be killed. The editor indicates that indeed, as is, it might. The writer sighs. The editor says, "(WRITER'S NAME), are you sure that nothing else happened while you were there? Look back in your notes. Are you sure that, you know, there isn't *anything* that you've left out?" This makes the writer concerned. What does this

if they had any out-of-body experiences — if, at the very least, they heard anyone chanting. I had no luck. Though I was asking anyone who could speak English (most of the tourists that day were German and Spanish), I was hoping to see people in robes, with huge dangly earrings and crystals around their necks. I was looking for the kind of people who could talk the talk and walk the walk, the sort who would have shared/possibly did share, in the mid-'70s, a Northern California commune with my aunt, Connie, who makes what she calls "Sacred Space Music." But the crowd was distinctly more mainstream than that, and tended to offer their findings without adornment. One South African woman: "Chanting? No chanting. Only sweating."

BY THIS POINT WE'RE WONDERING: IS THIS A STORY, OR A TOO-LONG ENTRY IN FODOR'S?

As is the case with virtually all tourist destinations, a few steps off the beaten path immediately frees you from the Whether they will say "ethnocentrowhatever" to him. Does not care. Room service steak last night was terrible, burger the night before even worse. Has found out that the laundry service is not *gratis*. Crankiness has set in, and it is the fault of his hosts. Frustration eating away at predisposition toward tolerance and good will. Thus...

THEORY IS THIS: Egypt is operated on a vast latticework of winks and handshakes. That there are different rules for everyone, always. For example, there is no longer climbing allowed on the pyramids, but almost everyone will tell you that for the right price, the guards will look the other way. Further, though the lowest, "unfinished" corridor of the Pyramid of Cheops is closed to the public, the right guide can give the man at the gate a pat on the back, and you're in — *at the Great Pyramid!* I simply climbed over a small barrier and went down, alone.

The point is: Did you ever wonder why there's a pyramid on the back of the American dollar bill?

(That's an *observation*, see? Makes you *think*.)

It starts on the way there. If you begin from virtually any point in Cairo or thereabouts, and with absolutely any of the thousands of cab drivers in the city, and tell them you are going to the pyramids at Giza, you have immediately mean? What does this editor, a talented and kind man, mean? Does he mean, gulp, that he wants him to "find" something in his notes that will make the story more "compelling," will give the story more "story?" What exactly does "find" mean, editor is asked. Editor retreats. They talk more. Editor indicates that perhaps by rearranging, in an itty bitty way, the order of events, that they may have something, that maybe story can be built, tension risen and resolved, better if Paragraph #8 becomes, say, Paragraph #3. And so it goes.

Author — in office, remember, without air conditioning — turns off fan, for it is blowing Post-it notes, containing dozens of ideas for brilliant stories, from desk. Author goes to bathroom, opens window, looks out at apartment building across alley, hoping for action. At 4:50 a.m., nothing. He once saw a man masturbating. Masturbating faster than he had ever thought possible.

So about the quagmired young writer: What happens if young writer does not deliver the story?

burden of 90 percent or so of the visitors to the area. Because most of the buses are on a relatively tight schedule, their patrons are found only at the entrance to each of the two biggest pyramids. Thus, walking to the sides or behind either, or better yet, the few hundred yards to Mycerinus, will bring a surprising amount of solitude. I spend the day wandering around, and watching the scene from a perch on the lower rocks of Cheöps and Chephren. (You're no longer allowed to climb either, but the ubiquitous Egyptian guards, on camelback, look the other way if you want to sit on the first couple levels.)

TRANSITION BACK TO THEORIES

Dr. Zahi Hawass is amused by the theories. Hawass is director of operations on the Giza plateau (his business card reads, pointedly, "Director of the Pyramids"), and has his office perhaps a quarter mile from the base of Cheops. "I don't mind," he says. "Anyone can have any theory that want, because all of the set in motion a series of events that, remarkably, varies only slightly each time. First, the cabbie will tell you that the ride will cost you thirty pounds. At the current exchange rate, that's only about $10, which is pretty reasonable (by American standards, at least) for the 15-minute ride, until you realize that that cabbie would be charging an Egyptian about six pounds ($2) for the same trip. If you can talk him down to something less humiliating, like L15 or L20, you will get in the car — almost invariably a black Peugeot — and be off. He will speak some English, and after asking about your nationality, he will ask you if you have been to the pyramids at Saqqara — another, older complex about 30 minutes from Cairo. You will say that yes, you have. He will then tell you how he can take you there for very cheap. You will tell him again that you have already been to Saqqara. "You know how cheap?" he will ask. You will admit that you don't know how much. He will tell you: "Twenty pounds." He will then ask you if you would like to see a "papyrus museum." (There are a dozen or so around Cairo. Resembling less museums than, say, upscale T-shirt shops, they each contain a smooth English-speaking guide who first explains the ancient and sacred process

Let's look at that: 1) He has wasted a week of travel, two weeks of writing, and another week on the editing process. 2) Instead of making around $8,000 for the story, he will make less than half that. And then 3) Perhaps this editor and other editors — oh how they talk! — will worry about the writer. He used to be pretty good, but can he deliver? Is he a risk? A prima donna? Who has time for writers who cannot deliver?

(Deep breath.)

So then there is Glass. We made an example of him. And did he deserve ridicule, scorn? Absolutely. Was he an inconceivably extreme example of what we're beating around the bush about? Yes, yes. But here's the big one:

Q: Did he act alone?
A: Of course not.

Mr. Glass was much less the crazed, Highland-Park-pressured, ambition-addled, pathological/congenital liar and trampler of all that is journalistically held dear, and more a byproduct of systemic flaws, systemic pressures, systemic greed, and the systemic careless-

theories are *wrong!*"

He is excitable this way. He suffers no fools. Hawass, who holds a doctorate in Egyptology from the University of Pennsylvania, has "an open mind" about interpretations of the area's significance, but is a steadfast believer in the value of legitimate science and hard evidence. And that gets him into trouble with some. As the gatekeeper to any scientific access to the pyramids, Hawass is both very powerful and very unpopular, at least among the many maverick groups and individuals who would want to conduct experiments at or around the pyramids. There are so many requests, and the area is so fragile, that he can allow access only to the most serious and legitimate organizations. His policies have aroused suspicion from some, whom, incidentally, he calls "pyramidiots," who accuse him of attempting to cover up evidence that would, for instance, link the pyramids to the people of Atlantis. In the face of intense criticism, however, he is a good sport.

Back on your way, you will soon notice the pyramids looming ahead. As you approach them, driving through Giza's main tourist drag, the driver will ask you if wish to ride a camel once there. You will tell him no, you do not wish to ride a camel. A minute later, he will slow down and motion to man who is standing in the median and now walking toward the car. The cabbie turns to you. "My friend," he says, gesturing toward the man. For a fleeting, naive moment you think that you are being introduced to the friend because your cabbie wishes to join you two in an expression of international goodwill. "Hi, how are you, sir" he says in excellent of making papyrus, then explains how good it would be if you purchased one of the hundreds of cheap papyrus drawings — many of which have been colored with an airbrush — that cover the walls.) You will tell him you have been there, too. He will then begin explaining the concept of papyrus. "Ancient art, very important to Egypt." You will tell him again that you have already been to one, that it was very nice, but that you do not wish to go again. Shortly thereafter, he will stop in front of one. It will take you a minute to convince him that you would like to move on.

ness fueled by the other three, less the Evil Mastermind, and more the Guy Who Got Caught.

Goes double for Barnicle Bill, or whatever that scrunchy-faced guy's name is. And J. Cooke. And the rest of them. The columnists, the feature writers. Of course they lie. They lie because we want our stories to have beginnings, middles and ends — a ridiculous notion when dealing with facts. "Tell us a story," say the editors. "Tell us a story," say the readers. "In maybe 3,000 words — but ideally far fewer — make the facts and quotes you find into a story," say the editors. "Make the story witty. Make the story colorful. Have interesting characters in the story. Give the story a nice conflict, some tension, some great quotes that advance the story, some great quotes that are articulated well by the story's principals, and are articulated well by the story's principals at the appropriate moments in the story when they are needed. Give the story 'arc.' Make this into a *'well-told story.'* And do it all within the space we

In August, at their invitation and on their dime, he traveled to Virginia Beach to speak at the Edgar Cayce Center.

He is also pragmatic. Responding to great demand, and also in an attempt to deal with the bottlenecks caused when visitors to the pyramids' chambers stayed too long inside in order to meditate, about ten years ago, Hawass created the "renta-a-pyramid" program, wherein groups of about 15 can actually pay for afterhours access to the King's Chamber of the Great Pyramid. For about $600, they get three hours inside the pyramid, and the ability to do pretty much what they want — chant, meditate, whatever. The program has been "very successful," he says, and in the 1990s has hosted about 5,000 people per year.

(FIX THIS:) Hawass, and most Egyptians, it seems, are very proud of their country's rich history, but at the same time are relaxed enough to accommodate those who seek personal or historical connections to English, reaching through the driver's window to shake your hand. "Fine." "English?" "American." "Ah, America, number one!" he will say. "Would you like to ride the camel?" "No thank you," you'll say, still trying to smile. "Do you know how much?" "No." "Very cheap." "No thank you." "Sure?" "Yes, thanks." The driver will shrug his apologies to the friend and put the car in gear. For the last quarter mile it will be obvious that the driver is looking for another opportunity to help you spend your money. His eyes are actually darting back and forth, scanning the roadside shops for friends, or merchandise that might interest you. A few blocks from the entrance to the plateau, he will slow down in front of another papyrus museum. The only reason he will not stop is because, as he is pulling over, you find yourself blurting out "Please! Drive!" Almost yelling it.

You will finally make it to the gate to the Giza complex. Ah. But...

By the time you have walked the maybe eighth of a mile up to the Great Pyramid, you will have been accosted by no less than six vendors, offering camel rides, horse rides, souvenirs, mule rides, Fanta, postcards, water and more camel rides. And the offers are not made, mind allot you, do it even if we have to chop the space allotment in half later on, then wrap the whole thing up with a satisfying ending, ideally with an anecdote that has a sort of "And-then-it-all-came-together-for-me" sort of feel, though of course not that obvious."

Now, what does it take to give stories beginnings, middles and ends, to give them these things, along with big meaning, and great timing, to infuse them with great moments and crackling dialogue and great characters and deeper significance and fitting symbolism and all the rest, and — and this is really important — to do it again and again and again? It takes... hmmm... what is the word? Oh, this is it: *Creativity*.

Let's talk for a second about this notion of "arc," of a story's "arc." How's about we do a little experiment with arc? Okay? Okay. Let's make a little diagram, showing a rather literal rendering of the concept of arc. Here it is:

Pretty, yes? It represents the ideal

Egypt's treasures.

"People want to belong to something," says Nahed Gad, Egypt's Undersecretary of International Tourism. "Egypt is a catalyst around which all the nationalities surround. Everyone wants to claim to be a part of the pyramids."

ETC.

you, in a benign, I'm-here-if-you-need-me sort of way, but in a way that always aggressively singles out the potential customers as individuals, mano a mano — a manner that requires repeated (my average was four) "No"s to prove your disinclination toward the proposed transaction.

In most guidebooks, there are warnings that tourists should keep a cheerful attitude toward their hosts, and to never assume that someone is out to sell you something. Thus, you make a point to be open-minded and sociable. As you reached the north side of Cheops, a burly young man leading a camel approaches you.

"Ride the camel?"

"No thanks," you say, grinning.

"You sure?"

"Yes, thanks."

"Very cheap."

"No thanks."

"You know how much?"

"No."

"Very cheap."

"No thanks, friend, I don't want to ride the camel."

"C'mon."

"No thanks."

In an effort to indicate that you are no longer interested in the cheerful exchange, you get out your camera and start pointing it around. Suddenly he is on the camel and has maneuvered himself directly in front of you.

story, with beginning, middle, end, the desired trappings, lessons learned, etc. Now, lets' make similarly diagrammatic representations of the facts, anecdotes and research done by the writer in preparation for the piece. Let's assume each one represents a particular element. for instance, the blobular one on the lower right might represent the fact that though the

writer is expected to deliver an article critical of his subject, he finds the subject oddly endearing. The piece on the upper left? That one represents the fact that the best moment during the writer's time with the subject, the moment that would make a great closing scene, actually occurred on the second day of a week spent in subject's company. And so on. Now, the big question is this: Which of the pieces fits into the arc? And the big answer is...

A few of them, maybe. What happens to the other pieces, the ones that

"Take my picture!" he says. "No thanks," you say. "C'mon, take my picture," he says again, and you feel, again naively, that maybe by doing so will end the conversation. You take the picture and give a little smile. He gets off the camel. "Now I take your picture, on the camel," he says, reaching for the camera. "No thanks," you say. "C'mon, no money. No charge. Picture on camel in front of pyramid. Very nice." Again, your thinking is that, it being free and all, it would be rude not to accept the kind offer made by your new Egyptian friend. You agree, and suddenly there is another man next to you, and he is holding the camel's reins while the first one is putting a headpiece on you. You climb on the camel and up you go. You look down at your new friend, he takes the picture, and you are ready to get down. But — does your naivete know no bounds? — your getting down right away is not part of the plan. Already the one man is leading the camel around the side of the pyramid, and you are on top of the camel, relatively helpless — you are, you might say, being taken for a ride.

"No, no, stop," you say. They pretend not to hear you, at which point you lapse into the requisite SimpleSpeak you involuntarily slip into in desperate don't quite fit, representative of truth and fact as they are? One of three things: a) They are discarded; b) They are chopped here and whittled there so they do fit; or c) They are jammed, as a toddler would a square peg into a round hole, until they fit, however mangled they become in the process.

Do you tire of poor analogies?

Author, who is tempted to take off his shirt due to the heat but will not for fear that security guard will find him half-naked and will want to play, says simply this, in conclusion: "If it sounds too good to be true, it probably is." And also this: "For each one who gets caught, there are 100 who never will be.— And finally this: "You have no one to blame but yourself."

Author has on his desk a bottle of Purell, which is by leaps and bounds his favorite new product in more than a decade. Purell is a lotion sort of thing that is clear and is pumped into one's hand much in the way of, say, Softsoap. But Purell is no

situations in foreign countries. "NO WANT RIDE!" you bellow. "DOWN." Now you are making a scene, so they let you down. You get off the camel, infuriated, hand the headdress back and turn to go. At which time the second, older man starts in about money. "Money for ride," he says, shocked and indignant that you could be thinking to leave. "I didn't want the ride," you say, bewildered. "C'mon, money for picture, for ride." You point to the first man: "He said no money for picture." The first guy looks at you like you've just ripped the arm off a leper. This goes back and forth for a few minutes. You can't believe it. The older guy can't believe it. "C'mon," he says, "no want to argue. Give him money," he says, and then delivers the kicker: "C'mon, you already make me sad."

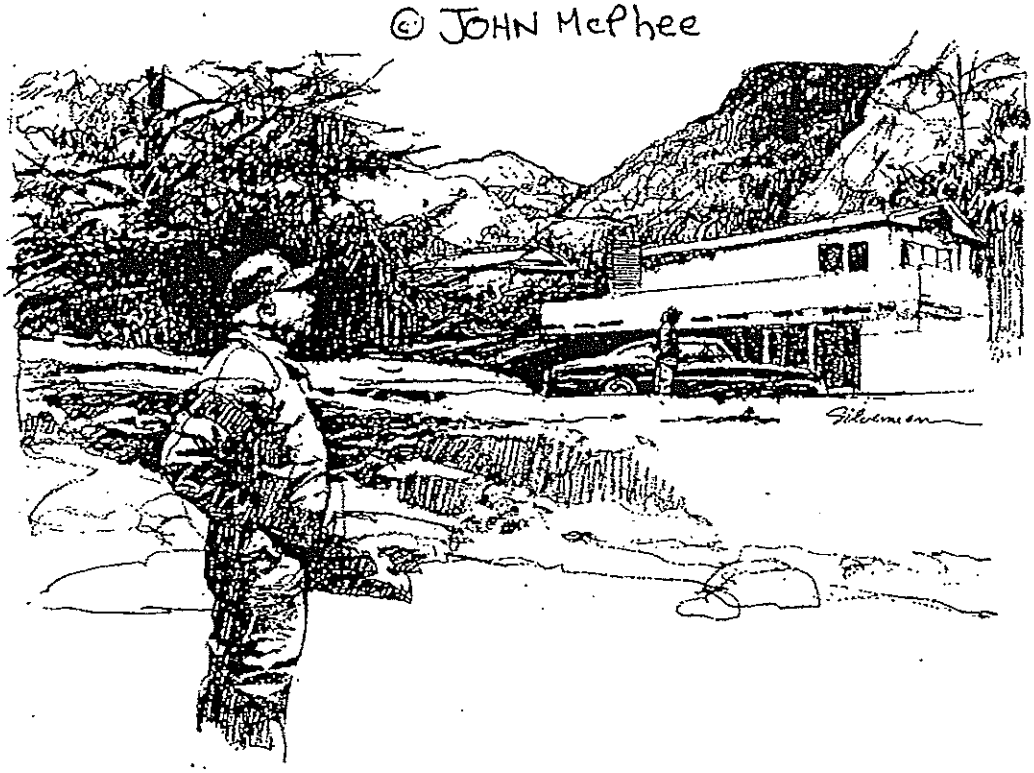
(That part goes on for another 1600 words, with resolution being that only *some* Egyptians are vermin.)

LATER ABOUT:
- How guide, Hesham, who has two degrees, makes $1,200 a year, lives in a hovel and has to poop in a hole in the corner.
- How I tell him I'll try to get him a visa to come to the U.S., then, after story is killed, doing nothing about it.

Softsoap. To cleanse one's hands with Softsoap, one needs water, and a sink, and a towel. Not so with Purell. Purell, also an effective cleanser, is rubbed onto one's hands right there and then, at work or home or whatever, with no towel or water or anything. And when Purell is rubbed onto one's hands, it feels both wet and cool, and smells of alcohol. One is invigorated by the smell. One feels that the smell is helping to make his hands clean; it is the unmistakable smell of germ removal. But one's hands are wet with Purell, and one does not have a towel. But — what's that? How could it be? — the Purell is drying, on one's hands, vaporizing, in the air, as if by magic!

THE CONTROL OF NATURE

LOS ANGELES AGAINST THE MOUNTAINS—I



IN Los Angeles versus the San Gabriel Mountains, it is not always clear which side is losing. For example, the Genofiles, Bob and Jackie, can claim to have lost and won. They live on an acre of ground so high that they look across their pool and past the trunks of big pines at an aerial view over Glendale and across Los Angeles to the Pacific bays. The setting, in cool dry air, is serene and Mediterranean. It has not been everlastingly serene.

On a February night some years ago, the Genofiles were awakened by a crash of thunder—lightning striking the mountain front. Ordinarily, in their quiet neighborhood, only the creek beside them was likely to make much sound, dropping steeply out of Shields Canyon on its way to the Los Angeles River. The creek, like every component of all the river systems across the city from mountains to ocean, had not been left to nature. Its banks were concrete. Its bed was concrete. When boulders were running there, they sounded like a rolling freight. On a night like this, the boulders should have been running. The creek should have been a torrent. Its unnatural sound was unnaturally absent. There was, and had been, a lot of rain.

The Genofiles had two teen-age children, whose rooms were on the uphill side of the one-story house. The window in Scott's room looked straight up Pine Cone Road, a cul-de-sac, which, with hundreds like it, defined the northern limit of the city, the confrontation of the urban and the wild. Los Angeles is overmatched on one side by the Pacific Ocean and on the other by very high mountains. With respect to these principal boundaries, Los Angeles is done sprawling. The San Gabriels, in their state of tectonic youth, are rising as rapidly as any range on earth. Their loose inimical slopes flout the tolerance of the angle of repose. Rising straight up out of the megalopolis, they stand ten thousand feet above the nearby sea, and they are not kidding with this city. Shedding, spalling, self-destructing, they are disintegrating at a rate that is also among the fastest in the world. The phalanxed communities of Los Angeles have pushed themselves hard against these mountains, an aggression that requires a deep defense budget to contend with the results. Kimberlee Genofile called to her mother, who joined her in Scott's room as they looked up the street. From its high turnaround, Pine Cone Road plunges downhill like a ski run, bending left and then right and then left and then right in steep christiania turns for half a mile above a three-hundred-foot straightaway that aims directly at the Genofiles' house. Not far below the turnaround, Shields Creek passes under the street, and there a kink in its concrete profile had been plugged by mud and a six-foot boulder. Hence the silence of the creek. The water was now spreading over the street. It descended in heavy sheets. As the young Genofiles and their mother glimpsed it in the all but total darkness, the scene was suddenly illuminated by a blue electrical flash. In the blue light they saw a massive blackness, moving. It was not a landslide, not a mudslide, not a rock avalanche; nor by any means was it the front of a conventional flood. In Jackie's words, "It was just one big black thing coming at us, rolling, rolling with a lot of water in front of it, pushing the water, this big black thing. It was just one big black hill coming toward us."

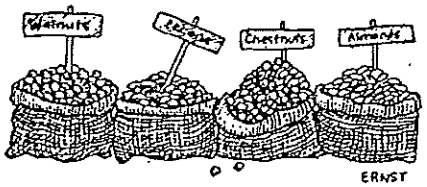
In geology, it would be known as a debris flow. Debris flows amass in stream valleys and more or less resemble fresh concrete. They consist of water mixed with a good deal of solid material, most of which is above sand size. Some of it is Chevrolet size. Boulders bigger than cars ride long distances in debris flows. Boulders grouped like fish eggs pour downhill in debris flows. The dark material coming toward the Genofiles was not only full of boulders; it was so full of automobiles it was like bread dough mixed with raisins. On its way down Pine Cone Road, it plucked up cars

from driveways and the street. When it crashed into the Genofiles' house, the shattering of safety glass made terrific explosive sounds. A door burst open. Mud and boulders poured into the hall. We're going to go, Jackie thought. Oh, my God, what a hell of a way for the four of us to die together.

The parents' bedroom was on the far side of the house. Bob Genofile was in there kicking through white satin draperies at the panelled glass, smashing it to provide an outlet for water, when the three others ran in to join him. The walls of the house neither moved nor shook. As a general contractor, Bob had built dams, department stores, hospitals, six schools, seven churches, and this house. It was made of concrete block with steel reinforcement, sixteen inches on center. His wife had said it was stronger than any dam in California. His crew had called it "the fort." In those days, twenty years before, the Genofiles' acre was close by the edge of the mountain brush, but a developer had come along since then and knocked down thousands of trees and put Pine Cone Road up the slope. Now Bob Genofile was thinking, I hope the roof holds. I hope the roof is strong enough to hold. Debris was flowing over it. He told Scott to shut the bedroom door. No sooner was the door closed than it was battered down and fell into the room. Mud, rock, water poured in. It pushed everybody against the far wall. "Jump on the bed," Bob said. The bed began to rise. Kneeling on it—on a gold velvet spread—they could soon press their palms against the ceiling. The bed also moved toward the glass wall. The two teen-agers got off, to try to control the motion, and were pinned between the bed's brass railing and the wall. Boulders went up against the railing, pressed it into their legs, and held them fast. Bob dived into the muck to try to move the boulders, but he failed. The debris flow, entering through windows as well as doors, continued to rise. Escape was still possible for the parents but not for the children. The parents looked at each other and did not stir. Each reached for and held one of the children. Their mother felt suddenly resigned, sure that her son and daughter would die and she and her husband would quickly follow. The house became buried to the eaves. Boulders sat on the roof. Thirteen automobiles were packed around the building, including five in the pool. A din of rocks kept banging against them. The stuck horn of a buried car was blaring. The family in the darkness in their fixed tableau watched one another by the light of a directional signal, endlessly blinking. The house had filled up in six minutes, and the mud stopped rising near the children's chins.

STORIES like that do not always have such happy endings. A man went outside to pick up his newspaper one morning, heard a sound, turned, and died of a heart attack as he saw his house crushed to pieces with his wife and two children inside. People have been buried alive in their beds. But such cases are infrequent. Debris flows generally are much less destructive of life than of property. People get out of the way.

If they try to escape by automobile, they have made an obvious but imperfect choice. Norman Reid backed his Pontiac into the street one January morning and was caught from behind by rock porridge. It embedded the car to the chrome strips. Fifty years of archival news photographs show cars of every vintage standing like hippos in chunky muck. The upper halves of their headlights peep above the surface. The late Roland Case Ross, an emeritus professor at California State University, told me of a day in the early thirties when he watched a couple rushing to escape by car. She got in first. While her husband was going around to get in his side, she got out and ran into the house for more silverware. When the car at last putt-putted downhill, a wall of debris was nudging the bumper. The debris stayed on the vehicle's heels all the way to Foothill Boulevard, where the car turned left.



Foothill Boulevard was U.S. Route 66—the western end of the rainbow. Through Glendora, Azusa, Pasadena, it paralleled the mountain front. It strung the metropolitan border towns. And it brought in emigrants to fill them up. The real-estate line of maximum advance now averages more than a mile above Foothill, but Foothill receives its share of rocks. A debris

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North wind like a fine drill
sky Ming porcelain for a thousand miles
The danger of what's-to-come is not in its distance
Two inches can break the heart
(*Great Wall*)

Halfway to Chengdu; past noon.
Against the brown riprap and scree grass
Two peach trees in blossom,
speechless from daybreak till now.
(*Jialing River*)

Sky color of old steam
the power that moves what moves
Moves as the Buddha moves unmoving
great river goes eastward
(*Leshan*)

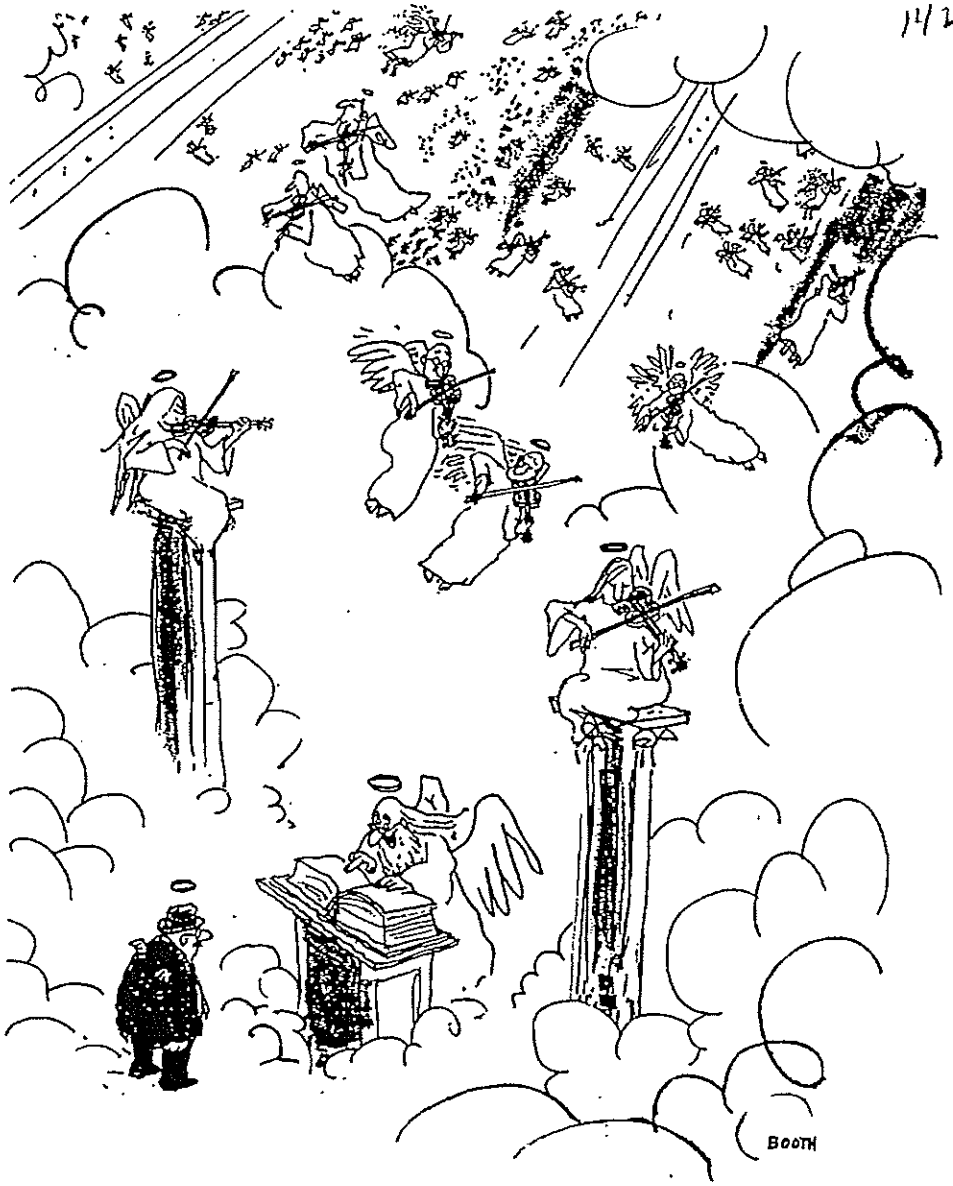
The emperor's men are dust-red from eternity,
Quince tree pale cinnabar in the field.
Invisible as dewdrops in the afterlife, time thumbs us,
Not lightly here, but not lightly there.
(*Xi'an*)
—CHARLES WRIGHT

• •

flow that passed through the Monrovia Nursery went on to Foothill and beyond. With its twenty million plants in twelve hundred varieties, Monrovia was the foremost container nursery in the world, and in its recovery has remained so. The debris flow went through the place picking up pots and cans. It got into a greenhouse two hundred feet long and smashed out the southern wall, taking bougainvillea and hibiscus with it. Arby's, below Foothill, blamed the nursery for damages, citing the hibiscus that had come with the rocks. Arby's sought compensation, but no one was buying beef that thin.

In the same storm, large tree trunks rode in the debris like javelins and broke through the sides of houses. Automobiles went in through picture windows. A debris flow hit the gym at Azusa Pacific College and knocked a large hole in the upslope wall. In the words of Cliff Hamlow, the basketball coach, "If we'd had students in there, it would have killed them. Someone said it sounded like the roar of a jet engine. It filled the gym up with mud, and with boulders two and three feet in diameter. It went out through the south doors and spread all over the football field and track. Chain-link fencing was sheared off—like it had been cut with a welder. The place looked like a war zone." Azusa Pacific College wins national championships in track, but Coach Hamlow's basketball team (12–18) can't get the boulders out of its game.

When a debris flow went through the Verdugo Hills Cemetery, which is up a couple of switchbacks on the mountain front, two of the central figures there, resting under impressive stones, were "Hiram F. Hatch, 1st Lieut. 6th Mich. Inf., December 24, 1843–October 12, 1922," and "Henry J. Hatch, Brigadier General, United States Army, April 28, 1869–December 31, 1931." The two Hatches held the hill while many of their comrades slid below. In all, thirty-five coffins came out of the cemetery and took off for lower ground. They went down Hillrose Street and were scattered over half a mile. One came to rest in the parking lot of a supermarket. Many were reburied by debris and, in various people's yards, were not immediately found. Three turned up in one yard. Don Sulots, who had moved into the fallout path two months before, said,



"Malcolm W. Dunlap, violin repairs. Malcolm, we are so pleased to see you."

• •

"It sounded like thunder. By the time I made it to the front door and got it open, the muck was already three feet high. It's quite a way to start off life in a new home—mud, rocks, and bodies all around."

Most people along the mountain front are about as mindful of debris flows as those corpses were. Here today, gone tomorrow. Those who worry build barricades. They build things called deflection walls—a practice that raises legal antennae and, when the caroming debris breaks into the home of a neighbor, probes the wisdom of Robert Frost. At least one family has experienced so many debris flows coming through their back yard that they long ago installed overhead doors in the rear end of their built-in garage. To guide the flows, they put deflection walls in their back yard. Now when the boulders come they open both ends of their garage, and the debris goes through to the street.

Between Harrow Canyon and Englewild Canyon, a private street called Glencoe Heights teased the mountain front. Came a time of unprecedented rain, and the neighborhood grew ever more fearful—became in fact so infused with catastrophic anticipation that it sought the drastic sort of action that only a bulldozer could provide. A

fire had swept the mountainsides, leaving them vulnerable, dark, and bare. Expecting floods of mud and rock, people had piled sandbags and built heavy wooden walls. Their anxiety was continuous for many months. "This threat is on your mind all the time," Gary Lukehart said. "Every time you leave the house, you stop and put up another sandbag, and you just hope everything will be all right when you get back." Lukehart was accustomed to losing in Los Angeles. In the 1957 Rose Bowl, he was Oregon State's quarterback. A private street could not call upon city or county for the use of heavy equipment, so in the dead of night, as steady rain was falling, a call was put in to John McCafferty—bulldozer for hire. McCafferty had a closeup knowledge of the dynamics of debris flows: he had worked the mountain front from San Dimas to Sierra Madre, which to him is Sarah Modri. ("In those canyons at night, you could hear them big boulders comin'. They sounded like thunder.") He arrived at Glencoe Heights within the hour and set about turning the middle of the street into the Grand Canal of Venice. His Cat was actually not a simple dozer but a 955 loader on tracks, with a two-and-a-quarter-yard bucket seven feet wide. Cutting water mains, gas mains, and sewers, he made a ditch that eventually extended five hundred feet and was deep enough to take in three thousand tons of debris. After working for five hours, he happened to be by John Caufield's place ("It had quit rainin', it looked like the worst was over") when Caufield came out and said, "Mac, you sure have saved my bacon."

McCafferty continues, "All of a sudden, we looked up at the mountains —it's not too far from his house to the mountains, maybe a hundred and fifty feet—and we could just see it all comin'. It seemed the whole mountain had come loose. It flowed like cement." In the ditch, he put the Cat in reverse and backed away from the oncoming debris. He backed three hundred feet. He went up one side of the ditch and was about halfway out of it when the mud and boulders caught the Cat and covered it over the hood. In the cab, the mud pushed against McCafferty's legs. At the same time, debris broke into Caufield's house through the front door and the dining-room window, and in five minutes filled it to the eaves.

Other houses were destroyed as well. A garage left the neighborhood with a car in it. One house was buried twice. (After McCafferty dug it out, it was covered again.) His ditch, however, was effective, and saved many places on slightly higher ground, among them Gary Lukehart's and the home of John Marcellino, the chief executive officer of Mackinac Island Fudge. McCafferty was promised a lifetime supply of fudge. He was on the scene for several days, and in one span worked twenty-four hours without a break. The people of the street brought him chocolate milkshakes. He had left his lowbed parked around the corner. When at last he returned to it and prepared to go home, he discovered that a cop had given him a ticket.

A Metropolis that exists in a semidesert, imports water three hundred miles, has inveterate flash floods, is at the grinding edges of two tectonic plates, and has a microclimate tenacious of noxious oxides will have its priorities among the aspects of its environment that it attempts to control. For example, Los Angeles makes money catching water. In a few days in 1983, it caught twenty-eight million dollars' worth of water. In one period of twenty-four hours, however, the ocean hit the city with twenty-foot waves, a tornado made its own freeway, debris flows poured from the San Gabriel front, and an earthquake shook the region. Nature's invoice was forty million dollars. Later, twenty million more was spent dealing with the mountain debris.

There were those who would be quick—and correct—in saying that were it not for the alert unflinching manner and imaginative strategies by which Los Angeles outwits the mountains, nature's invoices at such times would run into the billions. The rear-

guard defenses are spread throughout the city and include more than two thousand miles of underground conduits and concrete-lined open stream channels—a web of engineering that does not so much reinforce as replace the natural river systems. The front line of battle is where the people meet the mountains—up the steep slopes where the subdivisions stop and the brush begins.

Strung out along the San Gabriel front are at least a hundred and twenty bowl-shaped excavations that resemble football stadiums and are often as large. Years ago, when a big storm left back yards and boulevards five feet deep in scree, one neighborhood came through amazingly unscathed, because it happened to surround a gravel pit that had filled up instead. A tungsten filament went on somewhere above Los Angeles. The county began digging pits to catch debris. They were quarries, in a sense, but exceedingly bizarre quarries, in that the rock was meant to come to them. They are known as debris basins. Blocked at their downstream ends with earthfill or concrete constructions, they are also known as debris dams. With clean spillways and empty reservoirs, they stand ready to capture rivers of boulders—these deep dry craters, lying close above the properties they protect. In the overflowing abundance of urban nomenclature, the individual names of such basins are obscure, until a day when they appear in a headline in the Los Angeles *Times:* Harrow, Englewild, Zachau, Dunsmuir, Shields, Big Dalton, Hog, Hook East, Hook West, Limekiln, Starfall, Sawpit, Santa Anita. For fifty miles, they mark the wild boundary like bulbs beside a mirror. Behind chain links, their idle ovate forms more than suggest defense. They are separated, on the average, by seven hundred yards. In aggregate, they are worth hundreds of millions of dollars. All this to keep the mountains from falling on Johnny Carson.

The principal agency that developed the debris basins was the hopefully named Los Angeles County Flood Control District, known familiarly through the region as Flood Control, and even more intimately as Flood. ("When I was at Flood, one of our dams filled with debris overnight," a former employee remarked to me. "If any more rain came, we were going to have to evacuate the whole of Pasadena.") There has been a semantic readjustment, obviously intended to acknowledge that when a flood pours out of the mountains it might be half rock. The debris basins are now in the charge of the newly titled Sedimentation Section of the Hydraulic Division of the Los Angeles County Department of Public Works. People still call it Flood. By whatever name the agency is called, its essential tactic remains unaltered. This was summarized for me in a few words by an engineer named Donald Nichols, who pointed out that eight million people live below the mountains on the urban coastal plain, within an area large enough to accommodate Philadelphia, Detroit, Chicago, St. Louis, Boston, and New York. He said, "To make the area inhabitable, you had to put in lined channels on the plain and halt the debris at the front. If you don't take it out at the front, it will come out in the plain, filling up channels. A filled channel won't carry diddly-boo."

To stabilize mountain streambeds and stop descending rocks even before they reach the debris basins, numerous crib structures (barriers made of concrete slats) have been emplaced in high canyons—the idea being to convert plunging streams into boulder staircases, and hypothetically cause erosion to work against itself. Farther into the mountains, a dozen dams of some magnitude were built in the nineteen-twenties and thirties to control floods and conserve water. Because they are in the San Gabriels, they inadvertently trap large volumes of debris. One of them —the San Gabriel Dam, in the San Gabriel River—was actually built as a debris-control structure. Its reservoir, which is regularly cleaned out, contains, at the moment, twenty million tons of mountain.

The San Gabriel River, the Los Angeles River, and the Big Tujunga (Bigta Hung-ga) are the principal streams that enter the urban plain, where a channel that filled with rock wouldn't carry diddly-boo. Three colossal debris basins—as different in style as in magnitude from those on the mountain front—have been constructed on the plain to greet these rivers. Where the San Gabriel goes

past Azusa on its way to Alamitos Bay, the Army Corps of Engineers completed in the late nineteen-forties a dam ninety-two feet high and twenty-four thousand feet wide—this to stop a river that is often dry, and trickles most of the year. Santa Fe Dam, as it is called, gives up at a glance its own story, for it is made of boulders that are shaped like potatoes and are generally the size of watermelons. They imply a large volume of water flowing with high energy. They are stream-propelled, stream-rounded boulders, and the San Gabriel is the stream. In Santa Fe Basin, behind the dam, the dry bed of the San Gabriel is half a mile wide. The boulder-strewn basin in its entirety is four times as wide as that. It occupies eighteen hundred acres in all, nearly three square miles, of what would be prime real estate were it not for the recurrent arrival of rocks. The scene could have been radioed home from Mars, whose cobbly face is in part the result of debris flows dating to a time when Mars had surface water.

The equally vast Sepulveda Basin is where Los Angeles receives and restrains the Los Angeles River. In Sepulveda Basin are three golf courses, which lend ample support to the widespread notion that everything in Los Angeles is disposable. Advancing this national prejudice even further, debris flows, mudslides, and related phenomena have "provided literary minds with a ready-made metaphor of the alleged moral decay of Los Angeles." The words belong to Reyner Banham, late professor of the history of architecture at University College, London, whose passionate love of Los Angeles left him without visible peers. The decay was only "alleged," he said. Of such nonsense he was having none. With his "Los Angeles: The Architecture of Four Ecologies," Banham had become to this deprecated, defamed, traduced, and disparaged metropolis what Pericles was to Athens. Banham knew why the basins were there and what the people were defending. While all those neurasthenic literary minds are cowering somewhere in ethical crawl space, the quality of Los Angeles life rises up the mountain front. There is air there. Cool is the evening under the crumbling peaks. Cool descending air. Clean air. Air with a view. "The financial and topographical contours correspond almost exactly," Banham said. Among those "narrow, tortuous

residential roads serving precipitous house-plots that often back up directly on unimproved wilderness" is "the fat life of the delectable mountains."

People of Gardena, Inglewood, and Watts no less than Azusa and Altadena pay for the defense of the mountain front, the rationale being that debris trapped near its source will not move down and choke the channels of the inner city, causing urban floods. The political City of Los Angeles—in its vague and tentacular configuration—actually abuts the San Gabriels for twenty miles or so, in much the way that it extends to touch the ocean in widely separated places like Venice, San Pedro, and Pacific Palisades. Los Angeles County reaches across the mountains and far into the Mojave Desert. The words "Los Angeles" as generally used here refer neither to the political city nor to the county but to the multinamed urban integrity that has a street in it seventy miles long (Sepulveda Boulevard) and, from the Pacific Ocean at least to Pomona, moves north against the mountains as a comprehensive town.

The debris basins vary greatly in size—not, of course, in relation to the populations they defend but in relation to the watersheds and washes above them in the mountains. For the most part, they are associated with small catchments, and the excavated basins are commensurately modest, with capacities under a hundred thousand cubic yards. In a typical empty reservoir—whatever its over-all dimensions may be—stands a columnar tower that resembles a campanile. Full of holes, it is known as a perforated riser. As the basin fills with a thick-flowing slurry of water, mud, and rock, the water goes into the tower and is drawn off below. The county calls this water harvesting.

Like the freeways, the debris-control system ordinarily functions but occasionally jams. When the Genofiles' swimming pool filled with cars, debris flows descended into other neighborhoods along that part of the front. One hit a culvert, plugged the culvert, crossed a road in a bouldery wave, flattened fences, filled a debris basin, went over the spillway, and spread among houses lying below, shoving them off their foundations. The debris basins have caught as much as six hundred thousand cubic yards in one storm. Over time, they have trapped some twenty million tons of mud and rock. Inevitably, sometimes something gets away.

At Devils Gate—just above the Rose Bowl, in Pasadena—a dam was built in 1920 with control of water its only objective. Yet its reservoir, with a surface of more than a hundred acres, has filled to the brim with four million tons of rock, gravel, and sand. A private operator has set up a sand-and-gravel quarry in the reservoir. Almost exactly, he takes out what the mountains put in. As one engineer has described it, "he pays Flood, and Flood makes out like a champ."

IT was assumed that the Genofiles were dead. Firemen and paramedics who came into the neighborhood took one glance at the engulfed house and went elsewhere in search of people needing help. As the family remained trapped, perhaps an hour went by. They have no idea.

"We didn't know why it had come or how long it was going to last."

They lost all sense of time. The stuck horn went on blaring, the directional signal eerily blinking. They imagined that more debris was on the way.

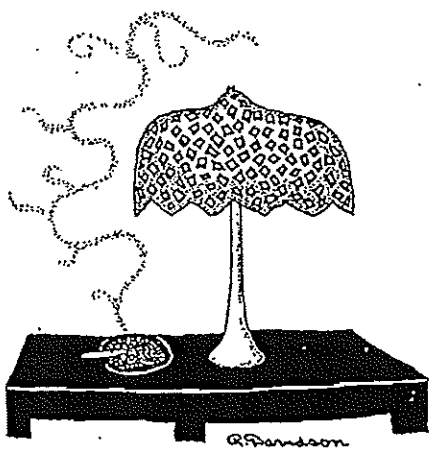
"We didn't know if the whole mountain was coming down."

As they waited in the all but total darkness, Jackie thought of neighbors' children. "I thought, Oh, my gosh, all those little kids are dead. Actually, they were O.K. And the neighbors thought for sure we were all gone. All our neighbors thought we were gone."

At length, a neighbor approached their house and called out, "Are you alive?"

"Yes. But we need help."

As the debris flow hit the Genofiles' house, it also hit a six-ton truck from the L.A.C.F.C.D., the vigilant bureau called Flood. Vigilance was about all that the L.A.C.F.C.D. had been able to offer. The patrolling vehicle and its crew of two were as helpless as everyone else. Each of the crewmen had lived twenty-six years, and each came close to ending it there. Minutes before the flow arrived, the truck labored up Pine Cone Road—a forty-one-percent grade, steep enough to stiff a Maserati. The two men meant to check on a debris basin at the top. Known as Upper Shields, it was less than two years old, and had been built in anticipation of the event that was about to occur. Oddly enough, the Genofiles and their neighbors were bracketed with debris basins—Upper Shields above them, Shields itself below them, six times as large. Shields Debris Basin, with its arterial concrete feeder channels, was prepared to catch fifty thousand tons. The Genofiles' house looked out over Shields as if it were an empty lake, its shores hedged about with oleander. When the developer extended Pine Cone Road up into the brush, the need for Upper Shields was apparent. The new basin came in the nick of time but—with a capacity under six thousand cubic yards—not in the nick of space. Just below it was a chain-link gate. As the six-ton truck approached the gate, mud was oozing through. The basin above had filled in minutes, and now, suddenly, boulders shot like cannonballs over the crest of the dam, with mud, cobbles, water, and trees. Chris Terracciano, the driver, radioed to headquarters, "It's coming over." Then he whipped the truck around and fled. The debris flow came through the chain-link barrier as if the links were made of paper. Steel posts broke off. As the truck accelerated down the steep hill, the debris flow chased and caught it. Boulders bounced against it. It was hit by empty automobiles spinning and revolving in the muck. The whole descending complex gathered force with distance. Terracciano later said, "I thought I was dead the whole way." The truck finally stopped when it bashed against a tree and a cement-block wall. The rear window shattered. Terracciano's partner suffered a broken leg. The two men crawled out through the window and escaped over the wall.



Within a few miles, other trapped patrols were calling in to say, "It's coming over." Zachau went over—into Sunland. Haines went over—into

Tujunga. Dunsmuir went over—into Highway Highlands. As bulldozers plow out the streets after events like these, the neighborhoods of northern Los Angeles assume a macabre resemblance to New England villages under deep snow: the cleared paths, the vehicular rights-of-way, the parking meters buried within the high banks, the half-covered drift-girt homes. A street that is lined with palms will have debris berms ten feet up the palms. In the Genofiles' front yard, the drift was twelve feet deep. A person, without climbing, could walk onto the roof. Scott's bedroom had a few inches of space left at the top. Kimberlee's had mud on the ceiling. On the terrace, the crushed vehicles, the detached erratic wheels suggested bomb damage, artillery hits, the track of the Fifth Army. The place looked like a destroyed pillbox. No wonder people assumed that no one had survived inside.

There was a white sedan under the house eaves crushed to half its height, with two large boulders resting on top of it. Near the pool, a Volkswagen bug lay squashed. Another car was literally wrapped around a tree, like a C-clamp, its front and rear bumpers pointing in the same direction. A crushed pickup had boulders all over it, each a good deal heavier than anything a pickup could carry. One of the cars in the swimming pool was upside down, its tires in the air. A Volkswagen was on top of it. Bob Genofile—owner, contractor, victim—walked around in rubber boots, a visored construction cap, a foul-weather jacket, studying the damage, mostly guessing at what he couldn't see. A big, strongly built, leonine man with prematurely white hair, he looked like a middle linebacker near the end of a heavy day. He wondered if the house was still on its foundation, but there was no telling in this profound chaos, now hardening and cracking like bad concrete. In time, as his house was excavated from the inside, he would find that it had not budged. Not one wall had so much as cracked. He was uninsured, but down in the rubble was a compensation of greater value than insurance. Forever, he could say, as he quietly does when he tells the story, "I built it, man."

Kimberlee's birthday came two days after the debris. She was a college student, turning nineteen, and her father had had a gift for her that he was keeping in his wallet. "I had nineteen fifty-dollar bills to give her for her birthday, but my pants and everything was gone."

Young Scott, walking around in the wreckage, saw a belt sticking out of the muck like a night crawler after rain. He pulled at it, and the buried pants came with it. The wallet was still in the pants. The wallet still contained what every daughter wants for her birthday: an album of portraits of U. S. Grant, no matter if Ulysses is wet or dry.

The living room had just been decorated, and in six minutes the job had been destroyed—"the pale tangerines and greens, Italian-style furniture with marble, and all that." Jackie Genofile continues the story: "We had been out that night, and, you know, you wear your better jewelry. I came home like an idiot and put mine on the dresser. Bob put his on the dresser. Three weeks later, when some workers were cleaning debris out of the bedroom, they found his rings on the floor. They did not find mine. But—can you believe it?—a year and a half later Scott was down in the debris basin with one of his friends, and the Flood Control had these trucks there cleaning it out, and Scott saw this shiny thing, and he picked it up, and it was my ring that Bob had given me just before the storm."

Before the storm, they had not in any way felt threatened. Like their neighbors, they were confident of the debris basins, of the concrete liners of the nearby stream. After the storm, neighbors moved away. Where Pine Cone Road swung left or right, the debris had made centrifugal leaps, breaking into houses. A hydrant snapped off, and arcing water shot through an upstairs window. A child nearly drowned inside his own house. The family moved. "Another family that moved owned one of the cars that ended up in our pool," Jackie told me. "The husband said he'd never want to live here again, you know. And she was in real estate."

After the storm, the Genofiles tended to wake in the night, startled and anxious. They still do. "I wake up once in a while really uptight," Bob said. "I can just feel it—go through the whole thing, you know."

Jackie said that when rain pounds on a roof, anywhere she happens to be, she will become tense. Once, she took her dog and her pillow and went to sleep in

Bob's office—which was then in Montrose, down beyond Foothill Boulevard.

Soon after the storm, she said, "Scotty woke up one night, and he had a real high temperature. You see, he was sixteen, and he kept hearing the mud and rock hitting the window. He kept thinking it was going to come again. Kim used to go four-wheeling, and cross streams, and she had to get out once, because they got stuck, and when she felt the flow of water and sand on her legs, she said, she could have panicked."

Soon after the storm, the family gathered to make a decision. Were they going to move or were they going to dig out their house and rebuild it? Each of them knew what might have happened. Bob said, "If it had been a frame house, we would be dead down in the basin below."

But it was not a frame house. It was the fort. "The kids said rebuild. So we rebuilt."

As he sat in his new living room telling the story, Bob was dressed in a Pierre Cardin jumper and pants, and Jackie was beside him in a pale-pink jumpsuit by Saint Germain. The house had a designer look as well, with its railings and balconies and Italianate marbles under the tall dry trees. It appeared to be worth a good deal more than the half-million dollars Bob said it might bring. He had added a second story and put all bedrooms there. The original roof spreads around them like a flaring skirt. He changed a floor-length window in the front hall, filling the lower half of it with cement block.

I asked what other structural changes he had made.

He said, "None."

The Genofiles sued Los Angeles County. They claimed that Upper Shields Debris Basin had not been cleaned out and that the channel below was improperly designed. Los Angeles settled for three hundred and thirty-seven thousand five hundred dollars.

From the local chamber of commerce the family later received the Beautification Award for Best Home. Two of the criteria by which houses are selected for this honor are "good maintenance" and "a sense of drama."

I HAVE not been specific about the dates of the stories so far recounted. This was to create the impression that debris pours forth from the mountains continually, perennially, perpetually—

which it does and does not, there being a great temporal disparity between the pace at which the mountains behave and the way people think. Debris flows do not occur in every possible season. When they do happen, they don't just spew from any canyon but come in certain places on the mountain front. The places change. Volumes differ. There are vintage years. The four most prominent in this century have been 1934, 1938, 1969, and 1978. Exceptional flows have occurred at least once a decade, and lesser ones in greater numbers. Exceptional flows are frequent, in other words, but not frequent enough to deter people from building pantiled mansions in the war zone, dingbats in the line of fire.

Why the debris moves when it does or where it does is not attributable to a single agent. The parent rock has been extensively broken up by earthquakes, but that alone will not make it flow. Heavy rainfall, the obvious factor, is not as obvious as it may seem. In 1980, some of the most intense storms ever measured in Los Angeles failed to produce debris flows of more than minimal size. The setting up of a debris flow is a little like the charging of an eighteenth-century muzzle-loader: the ramrod, the powder, the wadding, the shot. Nothing much would happen in the absence of any one component. In sequence and proportion each had to be correct.

On the geologic time scale, debris flows in the San Gabriel Mountains can be looked upon as constant. With all due respect, though, the geologic time scale doesn't mean a whole lot in a place like Los Angeles. In Los Angeles, even the Los Angeles time scale does not arouse general interest. A superevent in 1934? In 1938? In 1969? In 1978? Who is going to remember that? A relatively major outpouring—somewhere in fifty miles—about once every decade? Mountain time and city time appear to be bifocal. Even with a geology functioning at such remarkably short intervals, the people have ample time to forget it.

In February of 1978, while debris was still hardening in the home of the Genofiles, Wade Wells, of the United States Forest Service, went up and down Pine Cone Road knocking on doors asking how long the people had lived there. He wondered who remembered, nine years back, the debris-flow inundations of Glendora and Azusa,

scarcely twenty miles away. Only two did. Everyone else had arrived since 1969.

Wells is a hydrologist who works in the mountains, principally in San Dimas Experimental Forest, where he does research on erosion and sedimentation—the story of assembling debris. With a specialist's eye, he notes the mountain front, and in its passivity can see the tension: "These guys here, they should be nervous when it rains. Their houses are living on borrowed time. See that dry ledge? It's a waterfall. I've seen hundreds of tons of rock falling over it." More often, though, he is thousands of feet above the nearest house, on slopes so steep he sometimes tumbles and rolls. With his colleagues, he performs experiments with plants, rock, water, fire. When I first became interested in Los Angeles' battle with debris flows, I went up there with them a number of times. The mountains, after all, are where the rocks come from. The mountains shape the charge that will advance upon the city. People come from odder places than the East Coast to see this situation. One day, a couple of scientists arrived from the Cordillera Cantábrica, in northwestern Spain. When they saw how rapidly the San Gabriels were disintegrating, one of them said he felt sorry for Wells, who would soon be out of work. When Wells told him that the mountains were rising even faster than they were coming down, the man said, "*Muy interesante. Sí, señor.*"

From below, one look at the San Gabriels will suggest their advantage. The look is sometimes hard to come by. You might be driving up the San Gabriel River Freeway in the morning, heading straight at the mountains at point-blank range, and not be able to see them. A voice on KNX tells you that the day is clear. There's not a cloud in the sky, as the blue straight up confirms. A long incline rises into mist, not all of which is smog. From time immemorial, this pocket of the coast has been full of sea fog and persistent vapors. The early Spaniards called it the Bay of Smokes. Smog, the action of sunlight on nitrogen oxides, has only contributed to a preëxisting veil. Sometimes you don't see the San Gabriels until the streets stop and the mountains start. The veil suddenly thins, and there they are, in height and magnitude overwhelming. You plunge into a canyon flanked with soaring slopes before you realize you are out of town. The San Gabriel Mountains are as rugged as any terrain in America, and their extraordinary proximity to the city, the abruptness of the transition from the one milieu to the other, cannot be exaggerated. A lone hiker in the San Gabriels one winter—exhausted, snow-blinded, hypothermic—staggered down a ridgeline out of the snow and directly into the parking lot of a shopping center, where he crawled to a phone booth, called 911, and slumped against the glass until an ambulance came to save him.

Hang-glider pilots go up the San Gabriels, step off crags, and, after a period of time proportional to their skills, land somewhere in the city. The San Gabriels are nearly twice as high as Mt. Katahdin or Mt. Washington, and are much closer to the sea. From base platform to summit, the San Gabriels are three thousand feet higher than the Rockies. To be up in the San Gabriels is to be both above and beside urban Los Angeles, only minutes from the streets, and to look north from ridge to dry ridge above deeply cut valleys filled with gulfs of clear air. Beyond the interior valleys—some fifty thousand feet away and a vertical mile above you—are the summits of Mt. Baldy, Mt. Hawkins, Mt. Baden-Powell. They are so clearly visible in the dry blue sky that just below their ridgelines you can almost count the boulders that are bunched there like grapes.

If you turn and face south, you look out over something like soft slate that reaches fifty miles to an imprecise horizon. The whole of Los Angeles is spread below you, and none of it is visible. It is lost absolutely in the slate-gray sea, grayer than a minesweeper, this climatic wonder, this megalopolitan featherbed a thousand feet thick, known as "the marine layer." Early in the day, it is for the most part the natural sea fog. As you watch it from above through the morning and into the afternoon, it turns yellow, and then ochre, and then brown, and sometimes nearly black—like butter darkening in a skillet.

Glancing down at it one day while working on an experiment, Wade Wells said it seemed to have reached the hue of a first-stage smog alert. Wells was helping Edwin Harp, a debris-flow specialist from the United States Geological Survey, collect "undisturbed" samples by hammering plastic tubes into the mountain soil.

"If the soil were nice and compliant, this would be nice and scientific," Harp said, smacking the plastic with a wooden-handled shovel. After a while, he extracted a tube full of uncompliant material, and said, "This isn't soil; it's regolith." Regolith is a stony blanket that lies under soil and over bedrock. It crumbled and was pebbly in the hand.

As they prepared to sink another tube, I said, "What's a first-stage smog alert?"

"Avoid driving, avoid strenuous activity," Wells answered.

Harp said, "Avoid breathing."

The slope they were sampling had an incline of eighty-five per cent. They were standing, and walking around, but I preferred—just there—to sit. Needle grass went through my trousers. The heads of needle grass detach from the stalks and have the barbed design of arrows. They were going by the quiver into my butt but I still preferred to sit. It was the better posture for writing notes. The San Gabriels are so steep and so extensively dissected by streams that some watersheds are smaller than a hundred acres. The slopes average sixty-five to seventy per cent. In numerous places, they are vertical. The angle of repose—the steepest angle that loose rocks can abide before they start to move, the steepest angle the soil can maintain before it starts to fail—will vary locally according to the mechanics of shape and strength. Many San Gabriel slopes are at the angle of repose or beyond it. The term "oversteepened" is often used to describe them. At the giddy extreme of oversteepening is the angle of maximum slope. Very large sections of the San Gabriels closely approach that angle. In such terrain, there is not much to hold the loose ma-

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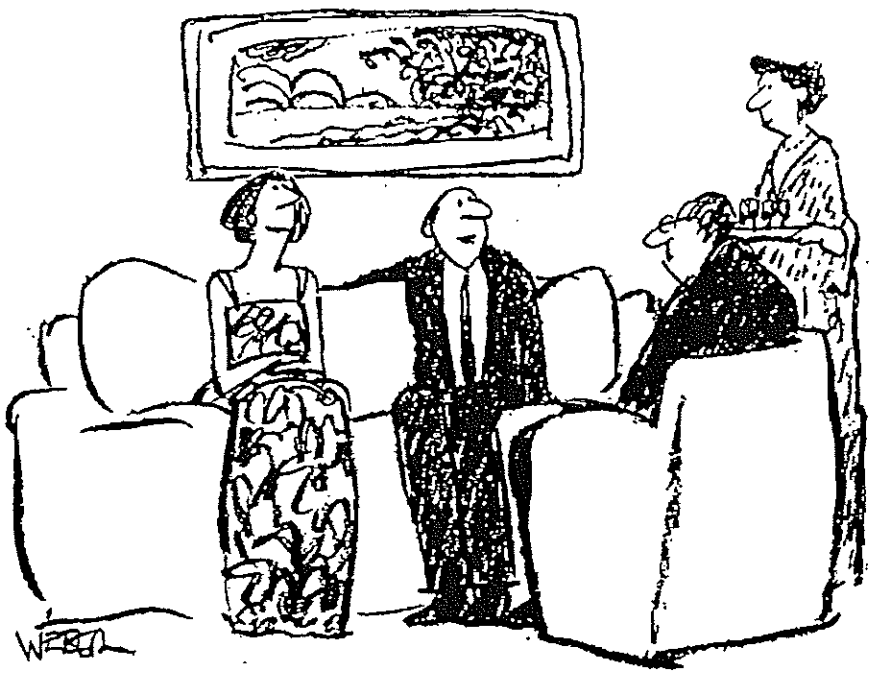
terial except the plants that grow there.

Evergreen oaks were fingering up the creases in the mountainsides, pointing toward the ridgeline forests of bigcone Douglas fir, of knobcone and Coulter pine. The forests had an odd sort of timberline. They went down to it rather than up. Down from the ridges the conifers descended through nine thousand, seven thousand, six thousand feet, stopping roughly at five. The forests abruptly ended—the country below being too dry in summer to sustain tall trees. On down the slopes and all the way to the canyons was a thicket of varied shrubs that changed in character as altitude fell but was everywhere dense enough to stop an army. On its lower levels, it was all green, white, and yellow with buckwheat, burroweed, lotus and sage, deerweed, bindweed, yerba santa. There were wild morning glories, Canterbury bells, tree tobacco, miner's lettuce. The thicket's resistance to trespass, while everywhere formidable, stiffened considerably as it evolved upward. There were intertwining mixtures of manzanita, California lilac, scrub oak, chamise. There was buckthorn. There was mountain mahogany. Generally evergreen, the dark slopes were splashed here and there with dodder, its mustard color deepening to rust. Blossoms of the Spanish bayonet stood up like yellow flames. There were lemonade berries (relatives of poison ivy and poison oak). In canyons, there were alders, big-leaf-maple bushes, pug sycamores, and California bay. Whatever and wherever they were, these plants were prickly, thick, and dry, and a good deal tougher than tundra. Those evergreen oaks fingering up the creases in the mountains were known to the Spaniards as chaparros. Riders who worked in the related landscape wore leather overalls open at the back, and called them chaparajos. By extension, this all but impenetrable brush was known as chaparral.

The low stuff, at the buckwheat level, is often called soft chaparral. Up in the tough chamise, closer to the lofty timber, is high chaparral, which is also called hard chaparral. High or low—hard, soft, or mixed—all chaparral has in common an always developing, relentlessly intensifying, vital necessity to burst into flame. In a sense, chaparral consumes fire no less than fire consumes chaparral. Fire nourishes and rejuvenates the plants. There are seeds that fall into the soil, stay there indefinitely, and will not germinate except in the aftermath of fire. There are basal buds that sprout only after fire. Droughts are so long, rains so brief, that dead bits of wood and leaves scarcely decay. Instead, they accumulate, thicken, until the plant community is all but strangling in its own duff. The nutrients in the dead material are being withheld from the soil. When fire comes, it puts the nutrients back in the ground. It clears the terrain for fresh growth. When chaparral has not been burned for thirty years, about half the thicket will be dry dead stuff—twenty-five thousand tons of it in one square mile. The living plants are no less flammable. The chamise, the manzanita—in fact, most chaparral plants—are full of solvent extractives that burn intensely and ignite easily. Their leaves are glossy with oils and resins that seal in moisture during hot dry periods and serve the dual purpose of responding explosively to flame. In the long dry season, and particularly in the fall, air flows southwest toward Los Angeles from the Colorado Plateau and the Basin and Range. Extremely low in moisture, it comes out of the canyon lands and crosses the Mojave Desert. As it drops in altitude, it compresses, becoming even dryer and hotter. It advances in gusts. This is the wind that is sometimes called the foehn. The fire wind. The devil wind. In Los Angeles, it is known as Santa Ana. When chamise and other chaparral plants sense the presence of Santa Ana winds, their level of moisture drops, and they become even more flammable than they were before. The Santa Anas bring what has been described as "instant critical fire weather." Temperatures rise above a hundred degrees. Humidity drops very close to zero. According to Charles Colver, of the United States Forest Service, "moisture evaporates off your eyeballs so fast you have to keep blinking."

Ignitions are for the most part caused by people—through accident or arson. Ten per cent are lightning. Where the Santa Anas collide with local mountain winds, they become so erratic that they can scatter a fire in big flying brands for a long distance in any direction. The frequency and the intensity of the forest fires in the Southern California chaparral are the great-



"Mary Jo is a dyed-in-the-wool feminist. Me, too, of course."

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est in the United States, with the possible exception of the wildfires of the New Jersey Pine Barrens. The chaparral fires are considerably more potent than the forest fires Wade Wells saw when he was an undergraduate at the University of Idaho or when he worked as a firefighter in the Pacific Northwest. "Fires in the Pacific Northwest are nothing compared with these chaparral fires," he remarked. "Chaparral fires are almost vicious by comparison. They're so intense. Chaparral is one of the most flammable vegetation complexes there are."

It burns as if it were soaked with gasoline. Chaparral plants typically have multiple stems emerging from a single root crown, and this contributes not only to the density of the thickets but, ultimately, to the surface area of combustible material that stands prepared for flame. Hundreds of acres can be burned clean in minutes. In thick black smoke there is wild orange flame, rising through the canyons like explosion crowns. The canyons serve as chimneys, and in minutes whole mountains are aflame, resembling volcanoes, emitting high columns of fire and smoke. The smoke can rise twenty thousand feet. A force of two thousand people may fight the fire, plus dozens of machines, including squadrons in the air. But Santa Ana firestorms are so violent that they are really beyond all effort at control. From the edge of the city upward, sixteen miles of mountain front have burned to the ridgeline in a single day.

So momentous are these conflagrations that they are long remembered by name: the Canyon Inn Fire, August, 1968, nineteen thousand acres above Arby's by Foothill Boulevard, above the world's foremost container nursery, above the chief executive officer of Mackinac Island Fudge; the Village Fire and the Mill Fire, November, 1975, sixty-five thousand acres above Sunland, Tujunga, La Crescenta, La Cañada. The Mill Fire, in the words of a foreman at Flood, "burnt the whole front face off."

It is not a great rarity to pick up the Los Angeles *Times* and see a headline like this one, from September 27, 1970:

14 MAJOR FIRES RAGE OUT OF CONTROL
256 HOMES DESTROYED AS FLAMES BURN 180,000 ACRES

In millennia before Los Angeles settled its plain, the chaparral burned every thirty years or so, as the chaparral does now. The burns of prehistory, in their natural mosaic, were smaller than the ones today. With cleared fire lanes, chemical retardants, and other means of suppressing what is not beyond control, people have conserved fuel in large acreages. When the inevitable fires come, they burn hotter, higher, faster than they ever did in a state of unhindered nature. When the fires end, there is nothing much left on the mountainsides but a thin blanket of ash. The burns are vast and bare. On the sheer declivities where the surface soils were held by chaparral, there is no chaparral.

Fine material tumbles downslope and collects in the waterless beds of streams. It forms large and bulky cones there, to some extent filling the canyons. Under green chaparral, the gravitational movement of bits of soil, particles of sand, and other loose debris goes on month after month, year after year, especially in oversteepened environments, where it can represent more than half of all erosion. After a burn, though, it increases exponentially. It may increase twentyfold, fortyfold, even sixtyfold. This steady tumbling descent of unconsolidated mountain crumbs is known as dry ravel. After a burn, so much dry ravel and other debris becomes piled up and ready to go that to live under one of those canyons is (as many have said) to look up the barrel of a gun.

One would imagine that the first rain would set the whole thing off, but it doesn't. The early-winter rains—and sometimes the rains of a whole season—are not enough to make the great bulk move. Actually, they add to it.

If you walk in a rainstorm on a freshly burned chaparral slope, you notice as you step on the wet ground that the tracks you are making are prints of dry dust. In the course of a conflagration, chaparral soil, which is not much for soaking up water in the first place, experiences a chemical change and, a little below its surface, becomes waterproof. In a Forest Service building at the foot of the mountains Wade Wells keeps some petri dishes and soil samples in order to demonstrate this phenomenon to passing unbelievers. In one dish he puts unburned chaparral soil. It is golden brown. He drips water on it from an eyedropper. The water beads up, stands there for a while, then collapses and spreads into the soil. Why the water hesitates is not well understood but is a great deal more credible than what happens next. Wells fills a dish with a dark soil from burned

chaparral. He fills the eyedropper and empties it onto the soil. The water stands up in one large dome. Five minutes later, the dome is still there. Ten minutes later, the dome is still there. Sparkling, tumescent, mycophane, the big bead of water just stands there indefinitely, on top of the impermeable soil. Further demonstrating how waterproof this burned soil really is, Wells pours half a pound of it, like loose brown sugar, into a beaker of water. The soil instantly forms a homuncular blob—integral, immiscible—suspended in the water.

In the slow progression of normal decay, chaparral litter seems to give up to the soil what have been vaguely described as "waxlike complexes of long-chain aliphatic hydrocarbons." These waxy substances are what make unburned chaparral soil somewhat resistant to water, or "slightly nonwettable," as Wells and his colleagues are wont to describe it. When the wildfires burn, and temperatures at the surface of the ground are six or seven hundred centigrade degrees, the soil is so effective as an insulator that the temperature one centimetre below the surface may not be hot enough to boil water. The heavy waxlike substances vaporize at the surface and recondense in the cooler temperatures below. Acting like oil, they coat soil particles and establish the hydrophobic layer—one to six centimetres down. Above that layer, where the waxlike substances are gone, the veneer of burned soil is "wettable." When Wells drips water on a dishful of that, the water soaks in as if the dish were full of Kleenex. When rain falls on burned and denuded ground, it soaks the very thin upper layer but can penetrate no farther. Hiking boots strike hard enough to break through into the dust, but the rain is repelled and goes down the slope. Of all the assembling factors that eventually send debris flows rumbling down the canyons, none is more detonative than the waterproof soil.

In the first rains after a fire, water quickly saturates the thin permeable layer, and liquefied soil drips downhill like runs of excess paint. These miniature debris flows stripe the mountainsides with miniature streambeds—countless scarlike rills that are soon the predominant characteristic of the burned terrain. As more rain comes, each rill is going to deliver a little more debris to the accumulating load in the canyon below. But, more to the point, each rill—its natural levees framing its impermeable bed—will increase the speed of the surface water. As rain sheds off a mountainside like water off a tin roof, the rill network, as it is called, may actually cube the speed, and therefore the power, of the runoff. The transport capacity of the watershed—how much bulk it can move—may increase a thousandfold. The rill network is prepared to deliver water with enough force and volume to mobilize the deposits lying in the canyons below. With the appearance of the rills, almost all prerequisites have now sequentially occurred. The muzzle-loader is charged. For a full-scale flat-out debris flow to burst forth from the mountains, the final requirement is a special-intensity storm.

Some of the most concentrated rainfall in the history of the United States has occurred in the San Gabriel Mountains. The oddity of this is about as intense as the rain. Months—seasons—go by in Los Angeles without a fallen drop. Los Angeles is one of the least-rained-upon places in the Western Hemisphere. The mountains are so dry they hum. Erosion by dry ravel greatly exceeds erosion by water. The celebrated Mediterranean climate of Los Angeles owes itself to aridity. While Seattle is receiving its average rainfall of thirty-nine inches a year, Chicago thirty-three, the District of Columbia thirty-nine, and New York City forty-four, Los Angeles is doing well if it gets fifteen. In one year out of every four over the past century, rainfall in Los Angeles has been under ten inches, and once or twice it was around five. That is pure Gobi. When certain storm systems approach Los Angeles, though—storms that come in on a very long reach from far out in the Pacific—they will pick up huge quantities of water from the ocean and just pump it into the mountains. These are by no means annual events, but when they occur they will stir even hydrologists to bandy the name of Noah. In January, 1969, for example, more rain than New York City sees in a year fell in the San Gabriels in nine days. In January, 1943, twenty-six inches fell in twenty-four hours. In February, 1978, just before the Genofiles' house filled with debris, nearly an inch and a half of rain fell in twenty-five minutes. On April 5, 1926, a rain gauge in the San Gabri-

els collected one inch in one minute.

The really big events result from two, three, four, five storms in a row coming in off the Pacific. In 1980, there were six storms in nine days. Mystically, unnervingly, the heaviest downpours always occur on the watersheds most recently burned. Why this is so is a question that has not been answered. Meteorologists and hydrologists speculate about ash-particle nuclei and heat reflection, but they don't know. The storm cells are extremely compact, deluging typically about ten miles by ten. One inch of rain on a patch that size is seven million two hundred and thirty-two thousand tons of water. In most years, in most places, a winter rain will actually stabilize a mountainside. The water's surface tension helps to hold the slope together. Where there is antecedent fire, water that would otherwise become a binding force hits the rill network, caroms off the soil's waterproof layer, and rides the steep slopes in cataracts into the nearest canyon. It is now a lubricant, its binding properties repelled, its volume concentrating into great hydraulic power. The vintage years present themselves when at least five days of rain put seven inches on the country and immediately thereafter comes the heaviest rainfall of the series. That is when the flint hits the steel, when the sparks fly into the flashpan. On that day, the debris mobilizes.

FIVE miles into the mountains from the edge of the city is a small, obscure, steep-sided watershed of twenty-five hundred acres which is drained by the Middle Fork of Mill Creek, a tributary of the Big Tujunga. The place is so still you can hear the dry ravel. From time to time, you hear the dry cough of semi-automatic weapons. It is the sound of city folk pursuing a hobby. Recreational marksmanship is permitted on the Middle Fork. There are eight million people just down the wash, and they shoot some interesting guns. Amos Lewis, who covered the region as a deputy sheriff for twenty-five years, once found beside the Angeles Crest Highway "a gun you could hide behind your tie—you'd think it was a tie clip." He has also seen enough muzzle-loaders to have made a difference in the Battle of Long Island. In an imaginative, life-loving city, there will always be people with a need to fire antique weapons. On July 24, 1977, a marksman on the Middle Fork rammed Kleenex down his barrel instead of cloth wadding. Under the Kleenex was black powder. In black powder there is more of an incendiary risk than there is in the smokeless kind. When the rifle fired, flaming Kleenex shot out the muzzle and burned down three thousand eight hundred and sixty acres, including the entire watershed of the Middle Fork.

It was a textbook situation—a bowl in the mountains filled with hard chaparral that had not been touched by fire in ninety-nine years. The older chaparral becomes, the hotter it burns. In its first ten years of new growth, it is all but incombustible. After twenty years, its renewed flammability curves sharply upward. It burns, usually, before it is forty years old. The hotter the fire, the more likely a debris flow—and the greater the volume when it comes. The century-old fuel of the Middle Fork was so combustible that afterward there were not even stumps. The slopes looked sandpapered. The streambed, already loaded, piled even higher with dry ravel. The Middle Fire, as the burn was known, was cause for particular alarm, because a small settlement was a mile downstream. Its name —Hidden Springs—contained more prophecy than its residents seemed prepared to imagine. Three hundred and ninety thousand cubic yards of loose debris was gathered just above them, awaiting mobilization.

Dan Davis and Hadi Norouzi, L.A.C.F.C.D. engineers, went up there after the burn to tell the people what they might expect. In midsummer, it is not a simple matter to envision a winter flood if you are leaning on a boulder by a desiccated creek. "We spent a lot of time trying to prevent a disaster from occurring," Davis said recently. "The fact that people would not believe what *could* happen was disappointing, actually. We held meetings. We said, 'There's nothing we can do for you. Telephones are going to go out. Mud will close the road. You're abandoned. If you're here, get to high ground.' " There was no debris basin, of course. This was a hamlet in the mountains, not a subdivision at the front. Conditions were elemental and pristine. "We walked people through escape routes," he went on. "We told them the story of fire and rain. We said, 'If heavy rain

starts, you've got fifteen to thirty minutes to get out.' "

Norouzi told them they were so heavily threatened that no amount of sandbags, barricades, or deflection walls was ever going to help them. "There is nothing you can build that will protect you."

Half a year went by, and nothing stirred. Cal Drake went on making jewelry in his streamside apartment. He and his wife, Mary, shared a one-story triplex with two other couples. The Drakes, from the city, had moved to Hidden Springs two years before, in quest of a "quiet life." Elva Lewis, wife of Amos the sheriff, went on running her roadside café. Gabe Hinterberg stayed open for business at the Hidden Springs Lodge. In December and January, there was an unusual amount of rain, but no flood. By the end of the first week of February, there had been eighteen inches in all. Then, in the next three days, came enough additional rain to make this the winter of the greatest rainfall of the twentieth century, exceeded only by 1884 and 1890 in the records of Los Angeles County. The National Oceanic and Atmospheric Administration selected the word "monstrous" to befit the culminating February storm, in which almost a foot of rain fell in twenty-four hours, and, in the greatest all-out burst, an inch and a half in five minutes. This was the storm that sent the debris down Pine Cone Road, overtopped the Zachau Basin, mobilized the corpses in the Verdugo Hills. In the small valley of the Middle Fork, upon the scorched impenetrable ground, three million tons of water fell in one day.

Toward midnight February 9th, an accidental fire broke out in a small building of Gabe Hinterberg's. A fire truck eventually came. Half a dozen people fought the fire, assisted by the heavy rain. One of them was George Scribner. The five-minute spike of greatest downpour occurred at about one-thirty. Half an hour later, George said, "Hey, we got the fire put out."

Gabe said, "Good deal."

And then Gabe and George were dead.

Amos Lewis, nearby, was holding a fire hose in his hand and was attempting to prevent it from kinking. In his concentration, he did not see danger coming. He heard nothing ominous. He only felt the hose draw taut. Through his peripheral vision he became aware that the fire truck—with the hose connected to it—was somehow moving sideways. Seconds later, Amos Lewis, too, was swept away.

The snout of the debris flow was twenty feet high, tapering behind. Debris flows sometimes ooze along, and sometimes move as fast as the fastest river rapids. The huge dark snout was moving nearly five hundred feet a minute and the rest of the flow behind was coming twice as fast, making roll waves as it piled forward against itself—this great slug, as geologists would describe it, this discrete slug, this heaving violence of wet cement. Already included in the debris were propane tanks, outbuildings, picnic tables, canyon live oaks, alders, sycamores, cottonwoods, a Lincoln Continental, an Oldsmobile, and countless boulders five feet thick. All this was spread wide a couple of hundred feet, and as the debris flow went through Hidden Springs it tore out more trees, picked up house trailers and more cars and more boulders, and knocked Gabe Hinterberg's lodge completely off its foundation. Mary and Cal Drake were standing in their living room when a wall came off. "We got outside somehow," he said later. "I just got away. She was trying to follow me. Evidently, her feet slipped out from under her. She slid right down into the main channel." The family next door were picked up and pushed against their own ceiling. Two were carried away. Whole houses were torn loose with people inside them. A house was ripped in half. A bridge was obliterated. A large part of town was carried a mile downstream and buried in the reservoir behind Big Tujunga Dam. Thirteen people were part of the debris. Most of the bodies were never found.

As Amos Lewis suddenly found himself struggling in the viscous flow, he more or less bumped into a whirling pickup, coming down in the debris from who knows where upstream. One of the roll waves picked him up and threw him into the back of the truck. As the vehicle spun around and around, it neared one bank. Lewis saw an overhanging limb. He reached for it, caught it, and pulled himself above the rocky flow. Years later, just about where this had happened, he told Wade Wells and me the story. "I got pushed to one side," he said as he finished. "I lucked out." Lewis is a

prematurely white-haired man with a white beard and dark-brown eyes. On this day in late spring, his muscular build and deeply tanned skin were amply displayed by a general absence of clothing. He wore bluejean shorts, white socks, mountain boots, and nothing else. When people began to discover human remains in the reservoir, he had gone in his patrol car to investigate the fate of his neighbors. "I had to go roll on them calls," he said. "A deputy sheriff has to roll on any type of body being found. I carried out at least four, maybe five, skulls."

The thirteen people who died in Hidden Springs were roughly a third of the year-round community; there was a much larger summer population. The main house of Lutherglen, a resort-retreat of the First English Evangelical Lutheran Church, remained standing but in ruins. Houses that stayed put were gouged out like peppers and stuffed with rocks. Lewis gestured across the canyon—across foundations with no houses on them, bolts sticking up out of cinder blocks where sills had been ripped away—toward some skeletal frames made of two-by-fours. "They used to be trailer stalls," he said. "The people left their cars by the river and walked up the bank to the trailers. The cars ended up in the dam." The First English Evangelical Lutherans sued the Los Angeles County Flood Control District for twenty million dollars. The judge threw the case out of court—followed, moments later, by the collection plate. Since the act in question was God's, the defendant might as well have been the plaintiff, and the Plaintiff the target of the suit.

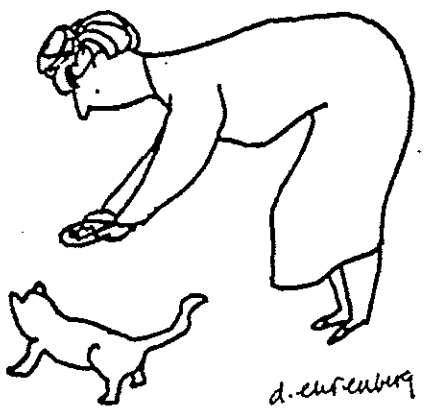
I remarked to Lewis, who is now retired as sheriff, that I thought I'd heard a machine gun earlier in the day. "I worked the canyon car here for twenty-five years," he said. "I probably rolled on a minimum of a hundred and fifty calls where people said they heard machine guns. I never saw a machine gun."

Wells was attentive to this remark, raising his eyes with interest. Behind his mild ecological look—his tortoise-shell glasses, his amiable scientific manner—lay a colonel's affection for ordnance. At the time, in the Reserve, he was a lieutenant colonel and rising. He'd been on active duty seven years, two in Vietnam. He told me one day that if California were to secede from the United States it would be one of the richest countries in the world and, with its present units of the National Guard, be among the best defended. "You can take a file and in fifteen minutes make an automatic weapon out of an M1," he said to Amos Lewis. "It can sound like a machine gun."

This set off a long and highly technical discussion between the scholarly hydrologist and the shirtless mountaineer, each slipping into a second self against a backdrop of huge boulders that had been somewhere else a short time before and had been delivered by a force that was high in the kiloton range. Most of the mud, sand, and rock had gone into the Big Tujunga, behind the dam, and the county had spent more than two million dollars taking it out. The debris that had stayed in the valley closely resembled glacial debris—chaotic, unsorted till, a round-rock mélange. Far up the hillsides framing the valley, some of it clung like bits of plaster stuck to an old wall, thus recording the high edges of the discrete slug, where six hundred thousand tons went by.

WHEN you walk in the stream valleys of the San Gabriels, you will see rocks the size of heads wedged among the branches of trees. In a small tight valley called Trail Canyon, I saw two boulders that were a good deal wider than the bed of the brook that had carried and rounded them. They were bigger than school buses. Surrounded by lesser debris, they had moved a long distance in its company. At a guess—from their dimensions and specific gravity—the aggregate weight of the two rocks was a hundred and sixty tons.

In February, 1978, a boulder weighing three hundred and fifteen tons ended up on a residential street about a third of a mile inside the Los Angeles city limits. Through some neighborhoods, boulders in great numbers advance like Chinese checkers. People pile them up against fences, use them in retaining walls. When Dan Davis was working for Flood, he found debris—on an urban thoroughfare after a storm—a mile and a half from the nearest debris basin. ("When I saw that, I knew we had a real problem.") In 1938, a restaurant on the main street of Sierra Madre was destroyed by invading boulders. Two-foot boulders rumbled through Claremont, coming to a stop three miles from the mountain front. Five miles from the front you can see boulders a foot in diameter. If you ask people how the rocks got there, they assume it was by a process that is no longer functioning. If you suggest that the rocks may have come from the mountains, people say, "No way." Off the eastern end of the San Gabriels, rocks the size of soccer balls are eight miles south of the front.



Building stones in places like Glendora and Covina were delivered by streams from high in the mountains. The stream-rounded rock is more vulnerable to earthquake than bricks would be, but bricks are not shipped F.O.B. by God, and in a land of kaleidoscopic risks what is one more if the rocks are free? Mike Rubel's castle, in Glendora, is made of stream-rounded debris in sizes approximating cannonballs. Dunsinane was not much larger than this suburban home. The ground level of Rubel's castle is twenty-two thousand square feet. From its battlements rise towers sixty-seven feet high and seventy-four feet high, built with San Gabriel boulders and store-bought cement. There are six towers, four set in the walls and two in the courtyard freestanding. Bees live in the Bee Tower, and emerge through archery slits. All around the walls, muzzles of cannons protrude from crenels that are lined with shark-fin glass.

The intensity of the electronic surveillance is high, but the owner is not unfriendly. He likes to sit on a balcony above the courtyard, looking out over his walls and through the crowns of palms at the ridgeline of the mountains. He is a large man to the point of private tailoring. He began his castle in 1959 and completed it in 1985. When he had been working on the project ten years, he took an unexpected delivery of building materials in the form of a

debris slug that breached his defenses, untimbered his portcullises, and got into the inner bailey.

"The ground was shaking just like an earthquake. In the washes, the water was going three billion miles an hour. You could hear the boulders rumbling. It was marvellous."

As a result, there is now a twelve-foot curtain wall on the periphery of the castle. Rubel calls his domain, which is surrounded by commoner houses on a most conventional street, the Kingdom of Rubelia. Numerous crafts are practiced there, and he has a hand-set-printing operation called the Pharm Press. In the Kingdom of Rubelia, F is Ph and Ph is F. There are hand-cranked phorges in the blacksmith phoundry. There are potters' wheels, looms, and lathes.

Sitting beside him on his balcony and dreamily looking at the mountain peaks, I said, "The castle is obviously the result of something."

Rubel said, "Yes. A genetic defect."

Rubel explained that he had built the castle with the help of numerous friends—friends from his days in Citrus High School, friends from his briefer days at Cal Poly. "We were twenty-year-old kids," he said. "And we were flunking out of school. We said, 'If we can't amount to anything, we might as well build a castle.' "

Prince Philip of Great Britain, who is not a Rubelian and gets no F, has made two visits to Rubel's castle.

Cal Poly—the California State Polytechnic University—is not to be confused with Caltech. I bring this up because I went to Caltech one day and, in a very impromptu manner, asked to see a geologist. Any geologist. It had not been my purpose, in pursuing the present theme, to get into the deep geology. I meant to roam the mountains and the mountain front with foresters and engineers, to talk to people living on the urban edge, to interview people who sell the edge—a foreign correspondent covering the battle from behind both lines. But not beneath them. This was a planned vacation from projects in geology—the continuation of a holiday that had begun with stream capture in the lower Mississippi and had spread forth into such innocent milieus as eruptions in Iceland and flowing red lava in Hawaii. Now, in Los Angeles, I had been avoiding geologists in the way that one tries to avoid visits to medical doctors. All had gone well for a matter of weeks, but then, one morning, I just happened to be in Pasadena looking up into the veiled chimeric mountains, and severe symptoms began to develop. Right off the street—in much the way that a needful patient would seek out a Doc-in-the-Box—I walked into the geology department of the California Institute of Technology, found the departmental office, and asked for professional help.

After a short wait, spent leafing through a magazine, I was shown into the office of Leon Silver, whom I knew only by reputation—an isotope geologist whose exacting contributions to geochronology have not repressed his interest in crustal settings, global tectonics, the Big Picture. An ebullient man, husky, in his sixties, he spread out the local sheets from the geologic map of California for a brief rehearsal of the rocks and faults before leading me to the roof of the building, where he continued his diagnosis in the panoramic presence of the rock itself. The roof was flat, a deck. Funnel vents and other apparatus gave the impression that the Caltech geology department was a cruise ship in the lee of seventy miles of mountains.

The institution as a whole, in its remarkable beauty and surprisingly compact size, is sort of a bonsai university—with pools, rialtos, inclined gardens—above which the mountains seem all the more immense. Silver said that if I was looking for first causes in the matter that concerned me I had come to the right place. "The geology provides the debris," he went on. "The San Gabes are a climber's nightmare. Several people a year die on the incompetent rock."

"Yes," I said. "The rock up there is really rotten."

Silver seemed offended. Drawing himself up, he said, "I beg your pardon, sir. It is not rotten. It is shattered." The region was a tracery of faults, like cracks in ancient paint. The mountains were divided by faults, defined by faults, and framed by them as well: on the near side, the Raymond Fault, the Sierra Madre Fault, the Cucamonga Fault; on the far side, the San Andreas Fault. The rock of the San Gabriels had been battered and

broken by the earthquakes on these and related faults. In 1971, Silver had flown over the San Gabes immediately after an earthquake that reached 6.2 on the Richter scale. Like artillery shells randomly exploding, the aftershocks were sending up dust in puffs all over the landscape. Something like that would add quite a bit, he said, "to the debris potential." Some of the rock up there had become so unstable that whole hunks of the terrain were moving like glaciers. One mountaintop was heading south like a cap tipping down on a forehead. Things like that had been going on for so long that the mountains were in many places loaded with debris from ancient landslides—prime material, prepared to flow. "The ultimate origin of the debris flows," he said, "is the continuous tectonic front that has made this one of the steepest mountain fronts in North America and produced a wilderness situation not a hundred metres from people's houses."

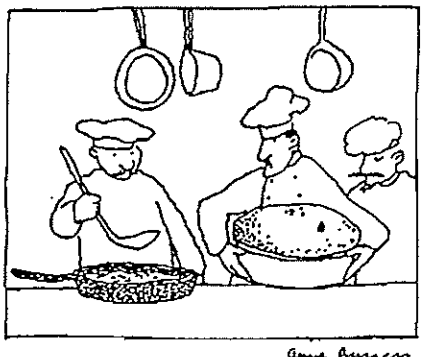
The continuous tectonic front is where the North American and Pacific Plates are sliding past each other—where Bakersfield moves toward Mexico City while Burbank heads for Alaska. Between Bakersfield and Burbank lie the San Gabriel Mountains. With the San Bernardino Mountains east of them, they trend east-west, forming a kink in the coastal ranges that come down from San Francisco and go on to Baja California. The kink conforms to a bend in the San Andreas Fault, which runs along the inland base of the mountains. The kink looks like this:

It could be a tiptoeing h. It resembles a prize-winning chair. Los Angeles is like a wad of gum stuck to the bottom of the chair. The mountains are one continuous system, but its segments are variously named. The upper stretch is called the Coast Ranges. The lower leg is called the Peninsular Ranges. The kink is called the Transverse Ranges.

My hieroglyph represents, of course, not only the mountains but the flanking San Andreas Fault, which comes up from the Gulf of California, bends left around Los Angeles, then goes on to San Francisco and north below the sea. As if this regional context were not large enough, Silver now placed it in a larger one. The East Pacific Rise, the ocean-basin spreading center away from which the Pacific Plate and other plates are moving, sinuously makes its way from the latitude of Tierra del Fuego all the way north to Mexico, where it enters the Gulf of California. The East Pacific Rise has splintered Mexico and carried Baja California away from the mainland—much as the Carlsberg Ridge has cracked open the deserts of Afro-Arabia and made the Red Sea. Baja is not moving due west, as one might guess from a glance at a map, but north by northwest, with the rest of the Pacific Plate. The cumulative power of this northward motion presses on the kink in the San Andreas, helping the mountains rise.

That much has long seemed obvious: as the two sides of the San Andreas slide by each other, they compress the landscape at the kink. It has been considerably less obvious that a compressional force accompanies the great fault wherever it goes. Until recently, the building of the Coast Ranges and the Peninsular Ranges has in no way been attributed to the San Andreas Fault. A paper published in *Science* in November, 1987—and signed by enough geologists to make a quorum at the Rose Bowl—offers evidence that the San Andreas has folded its flanking country, much as a moving boat crossing calm waters will send off lateral waves. The great compression at the kink is withal the most intense. The Coast Ranges and the Peninsular Ranges are generally smaller than the Transverse Ranges. The San Gabriels are being compressed about a tenth of an inch a year.

Why the kink is there in the first place is "not well understood." Just to the northeast, though, in the Great Basin of Utah and Nevada, the earth's mantle is close, the earth's crust is thin and stretching. In the past few million years, the geographic coördinates of Reno and Salt Lake—at the western and eastern extremes of the Great Basin—have moved apart sixty miles. This large new subdivision of the regional tectonics is in every way as entrancing as it is enigmatic. Almost all of California may be headed out to sea. Already, the east-west stretching of the Great Basin has put Reno west of Los Angeles, and it may be what has bent the San Andreas Fault.



Anne Burgess

Some of the rock of the San Gabriels is two hundred times as old as the San Andreas Fault, which has been in existence for less than a five-hundredth of the history of the world. Plates come and go—splitting, welding, changing through time, travelling long distances. Before the present North American and Pacific Plates began to work on this particular rock, Silver said, it may have been "bashed around in Mexico twice and perhaps across the Pacific before that." He continued, "It's a bedrock ridge up there. It's a weirdo wonderful block of rocks, the most complicated mountain range in North America. It includes the oldest rocks on the West Coast. The San Gabes look like a flake kicked around on plate boundaries for hundreds of millions of years."

The Santa Monica Mountains, a sort of footnote to the big contiguous ranges, stood off to the southwest of us, discrete and small. Like any number of lesser hills freestanding in the region, they were flexures of the San Andreas system. Oil people had found pay in the traps formed by such flexures. The Santa Monica Mountains were as shattered as the San Gabes. The several debris basins in the Santa Monicas had worked with varying success. People had died in their beds there, buried alive by debris.

The San Gabriels were rising faster than they were disintegrating, Silver said. The debris basins had given geomorphologists an unparalleled opportunity to calculate erosion rates. They could even determine how much mountain is removed by a single storm. On the average, about seven tons disappears from each acre each year—coming off the mountains and heading for town.

Between the geology-department roof and the San Gabriels, the city gradually rose. A very long, ramplike, and remarkably consistent incline ended in the sheerness of the mountain

wall. This broad uniform slope is where the seven tons an acre had emerged from the mountains, year upon year for a number of millions of years—accumulating as detrital cones, also known as fans. Broad at the bottom, narrow at the top, the fans were like spilled grain piling up at the edge of a bin. There were so many of them, coming down from stream after stream, that they had long since coalesced, forming a tilted platform, which the Spaniards had called the bajada.

"I used to live on the mountain front," Silver said. "By Devils Gate, at the mouth of Arroyo Seco. We could hear the big knockers go by—the three-metre boulders. The whole front face of the San Gabes is processed."

"Processed?"

"Shattered and broken. It is therefore vulnerable to landsliding, to undercutting by the streams, to acceleration by local earthquakes, to debris flows."

"Why does anybody live there?"

"They're not well informed. Most folks don't know the story of the fire-flood sequence. When it happens in the next canyon, they say, 'Thank God it didn't happen here.'"

"Why would a geologist live there?"

"It's a calculated risk. The higher you build, the cooler it is. There are great views. And at night, up there, the cool air off the mountains flows down and pushes the dirty air masses back. The head of our seismological laboratory lives on the mountain front. In fact, most of the Caltech geology department lives on the mountain front."

"Where do *you* live?"

"Way out on the fan."

Silver passed me along to his colleague Barclay Kamb—the tectonophysicist, X-ray crystallographer, and glaciologist, who discovered, among other things, the structures of the high-pressure forms of ice: ice II through ice IX. Kamb once studied the Sierra Madre Fault Zone on the San Gabriel mountain front, and walked the relevant canyons. Recently, he has been using a surging glacier near Yakutat as a laboratory for the study of how rocks move, since ice deforms in much the way that rock does. He was about to leave for Alaska when I dropped in on him in his office. His mother was there, his father, and his son Linus, who was named for Kamb's father-in-law, Linus Pauling. In a swirl of ropes, ice axes, grad students, and relatives, Kamb, who has been described by another colleague as "the smartest man in the world," tracked six conversations simultaneously, one of which summarized concisely his sense of flowing debris. "There's a street in Altadena called Boulder," he began. "It is called Boulder for a very good reason. It is subject to severe threat. Boulder Road, below the Rubio Debris Basin, is the former course of Rubio Creek. You see encroachment of human habitation in many areas like that, which are most at risk. Above the debris basins, there are crib structures in the canyons. The theory is to prevent sediment from coming out of the mouths of the canyons. I think most geologists would say that is ridiculous. You're not changing the source of the sediment. You are just storing sediment. Those cribworks are less strong than nature's own constructs. The idea that you can prevent the sediment from coming out is meddling with the works of nature. Sooner or later, a flood will wipe out those small dams and scatter the debris. Everything you store might come out in one event. We're talking human time—not geologic time." Kamb lives in Pasadena, close by the mountain front.

Just upstairs was Andrew Ingersoll, the planetary scientist. In the San Gabriels, he had lived behind the lines. In the nineteen-sixties, he moved his family into a cabin that was so far up Big Santa Anita Canyon that they had to hike a mile and a quarter just to get to their car. They leased the place from the Forest Service. When they moved in, the children were three and four. Ingersoll was an assistant professor. "My colleagues in the geology department thought I was becoming a permanent hippie," he said. "But in those days everybody was some sort of hippie." The canyon was full of crib structures, arresting debris. Ingersoll did not know how to make sense of them unless they were "an example of bureaucracy doing something for its own sake." (In any case, the small wash above the Ingersolls' cabin was unprotected.) In January of 1969, during a nine-day series of storms, twelve inches of rain fell in one night. A debris flow hit the cabin, broke through a wall, and delivered three feet of mud, innumerable rocks, and one oak to the Ingersolls. The family regarded this as

"just a lot of fun," he said, and continued, "Those little dams must have been nearly insignificant. They were based on the experience of Swiss farmers, and this may have been a totally different situation. It might have been a very poor concept to try to control the San Gabriels."

I also met Vito Vanoni, who is now a professor emeritus. A formal, small, wiry man with a husky voice and a sweet smile, he is a civil engineer, and a founding and still central figure in Caltech's Environmental Quality Laboratory. "That's an awful pile of rock and dirt up there, and we're proposing to hold it back," he said. "To do something like that is extremely expensive, but there are so many of us here to pay the bill, to protect those who insist on living up there. Our zoning is not strong enough to prevent this. The forces of development are hard to oppose. Most people who buy property in those areas never see the map and wouldn't know what they were looking at if they saw one. Very few are aware. When they see the concrete stream channels, I don't know what they think. How many people really realize why the channels are there and why they are as big as they are? You can't build a channel without a debris basin, or the debris will fill up the channel and then start sashaying back and forth. Debris basins have been built in response to the need of the community —after people have had sediment in their living rooms."

I asked Vanoni where he lived.

"Up there," he said. "Below Eaton Basin—since 1949. Like my neighbors, I figure that I'm protected. I haven't seen anything across my yard yet." After a pause, he added, "If they should have a failure up there, I'm afraid I'd get wet." There was a longer pause, then another sweet smile, and he said, "I live a hundred yards from the Raymond Fault."

—JOHN MCPHEE

(This is the first part of a two-part article.)

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REMARKS WE DOUBT EVER GOT MADE

[From the Times]

Mr. Quayle said that throughout his Southern trip, people came up to him to say, "We cannot afford to lose and to turn over the reins of government to somebody who doesn't have the qualifications and the experience to handle the national security of America."

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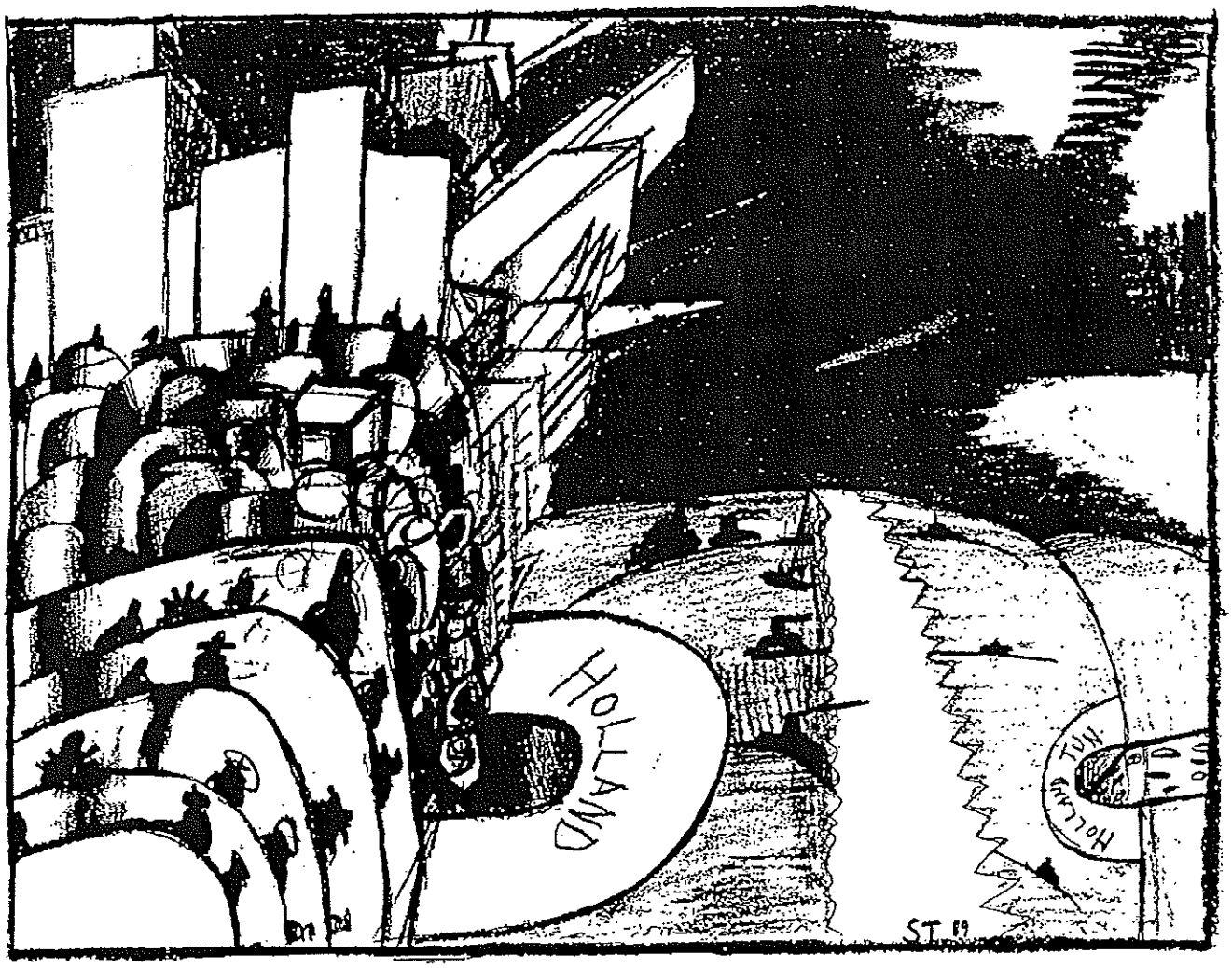
A REPORTER AT LARGE

CANAL STREET



CANAL STREET, in lower Manhattan, is the shortest route from an East River crossing to a Hudson River crossing on the island. To the east, Canal Street leads across the Manhattan Bridge, to Brooklyn; to the west, it leads into the Holland Tunnel, to New Jersey. Canal Street is actually an extension of Brooklyn's Flatbush Avenue and of any number of roads in New Jersey laid through the crooked alleys of downtown. The traffic on Canal Street never stops. It is a high-energy current jumping constantly between the poles of Brooklyn and New Jersey. It hates to have its flow pinched in the density of Manhattan, hates to stop at intersections. Along Canal Street, it moans and screams. Worn brake shoes of semi trucks go "Ooohhhh nooohhhh" at stoplights, and the sound echoes in the canyons of warehouses and Chinatown tenements. People lean on their horns from one end of Canal Street to the other. They'll honk non-stop for minutes at a time, until the horns get tired and out of breath. They'll try different combinations: shave-and-a-haircut, long-long-long, short-short-short-long. Some people have musical car horns; a person purchasing a musical car horn seems to be limited to a choice of four tunes—"La Cucaracha," "Theme from 'The Godfather,'" "Dixie," and "Hava Nagila." Eventually, the flow of traffic knocks over everything upright along its route—mailboxes, fire hydrants, light poles, signs. Litter, fruit, rats, pigeons, and hats it flattens and pulverizes. Smaller pieces of metal it presses into the asphalt and makes two-dimensional. House keys, safety pins, gaskets, pop tops, bottle caps, watch gears, buckles, umbrella ribs, alligator clips, and oil-paint tubes (many artists have studios nearby) shine dully in the pavement. When the traffic lets up a little—on the weekends, in the early morning—men working on the street with jackhammers erect barricades and break up the asphalt and throw it and its collection of lost objects into dumpsters and cart it away.

At either end of Canal Street, billboards on the sides of buildings take a last shot at the traffic before it gets by. Canal Street is a gantlet of billboards and signs; Courvoisier, Pearl Paint, Bally's Grand Hotel, Salem Cigarettes, Lincoln Savings Bank, McDonald's, and signs in Chinese impend on the traffic, which is covered with signs and graffiti itself. A white panel truck with "Lust" graffitied on its side in black

cuts off a Floors by Palumbo van and gets a horn blast in the back. Perk Up, Inc., of Tarrytown, gives a blast to Budget Rent-A-Truck; Taglianetti's Furniture Delivery Service blasts Palmieri Truckmen of Brooklyn; Firebird Freight stops inches from Basic Leasing Corp. ("We Lease Dishwashers and Ice Makers") and emits a bellow of rage. A yellow moving truck with the motto "On the Move Since 1873" stalls in an intersection through several changes of the light as horn blasts bounce off its side. Weekly, the billboards flicker and change. Signs painted on buildings cover each other, fade, fall in flakes, reappear. Billboards shed strips of paper. One night, the car-burglar-alarm store near the corner of Canal and Thompson began to burn when Tony, the guy who sleeps in the store, apparently set fire by accident to a dish of rubbing alcohol in which he was soaking his earring studs, and suddenly flames were all around him, and he dived out under the security gate, which he could get only half open, and soon flames were shooting clear across the sidewalk, and the Fire Department came, and Tony was shivering on the street in a Black Sabbath T-shirt among the hoses saying, "I know I'm fired. I've already accepted that," and I brought from my apartment an old down vest and gave it to him, and he said, "Hey, this is comfortable. How much do you want for it?" and we stood and watched as the flames reached the big letters "Auto Alarms" on the top of the store, and they began to burn smokily, and the firemen on the roof knocked them off with axes, and they fell to the sidewalk and burned themselves in scrambled order into the chalk-white cement.

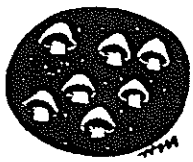
I lived two doors down, in a loft above an Army-Navy-surplus store. The next night, burglars came through the burned-out building, climbed our back fire escape, got into a second-floor storeroom, and stole several boxes of boots—all left feet, as it turned out. When my landlord, the proprietor of the Army-Navy-surplus store, learned this last fact, he was almost happier than if he hadn't been robbed in the first place. The landlord is from Romania. His first name is Hugo, but he calls himself Gary; once I asked him where he got that name, and he said, "A chick gave it to me." Gary is Jewish, but he has an alternative set of business cards printed with an Arabic-sounding alias to give to people who might not like Jews. The surplus American Army shirts he wears at work generally have a name like "McCoy" or "Seagraves" over the breast pocket. When people he doesn't want to talk to come into his store looking for the owner, he tells them, "The owner is in Africa."

The unit of exchange on Canal Street is the dallah. Dallahs are dollars crossbred with dinars, pesos, yen, dirhams, zlotys, rubles, piastres. Salesmen in storefronts and sidewalk venders who know almost no other English yell "Fifty dallah!" and "T'ree dallah!" and "Ten dallah!" up and down the street. Dollars often exist only on paper or video-display terminals; dallahs are always real. Dallahs are green, of small denomination, faded, crumpled, marked with ink and duck sauce and fingerprints and smears of blood. Dollars are carried in a bankbook or a wallet; the proper way to carry dallahs is in the right-front pants pocket in a folded wad with a red rubber band around it. When I ask Gary to lend me forty, he says, "Take sixty." He pulls his wad from his pocket and peels off three twenties. Then he stands looking at me with his eyebrows raised and his thumb poised above the bills, in case I might want more. He says, "All you got to do is ask." He says now if he gets robbed that's sixty he won't lose. Dallahs suggest robbery. To defend against it, Gary takes elaborate measures, which include surrounding himself with Doberman pinschers named Prince and Contessa and a Rottweiler named Spirit. Prince is Gary's favorite. One day, Gary and Prince chased a suspected shoplifter from his store into a deli, where I was standing in the checkout line. Prince was hanging from the guy's sleeve, and Gary was beating the guy's head with a varnished brown billy club. The expression on Gary's face looked like one you might make to frighten a child. He was screaming from down in his throat. Shortly afterward, Prince was stolen. A photograph of Gary with tears in his eyes holding up a reward check for a thousand dollars for the return of his dog appeared on page 4 of the *Post*. The next day, Prince was returned by a man who took the precaution of arriving with a police escort. Gary asked how much he wanted, and he said he'd take five hundred. Gary wrote him a check.

Canal Street, which jury-rigs Brooklyn to New Jersey, is the place to go if you want to jury-rig something. Stores on Canal Street sell a lot of duct tape, extension cords, plastic sheeting to put over your windows in the winter, stapling guns, twine, plastic wood, miracle glues, quick-drying epoxy resins, and multi-plug connectors. The street carpenters all kinds of shaky combinations. In hot weather, the passing traffic with its windows down blasts from many speakers a mixture of songs, like a radio dial being spun. Near the corner of Canal and Broadway is a store that used to sell luggage, jewelry, and takeout Chinese food but now just sells luggage. Another store sells plastic sheeting and imitation classical statues made of fibreglass. The nymphs and dryads and goddesses are displayed out front, chained to a security grate with bicycle locks around their necks. At Christmas, an automotive store at Canal and Hudson used to run a string of Christmas lights through the coils of razor wire above the fence surrounding its collection of old tires. Gary is not big on Christmas decorations. One year at Christmas he hung a white dove above the cash register from a strip of flypaper. Gary's store used to be as hodgepodge as any on Canal Street, with bins of gay and straight porno books, Statue of Liberty paperweights, needle-nosed pliers, and underwater wrist compasses for skin divers. Now he sells mainly Army-Navy surplus and survival gear. Among his most popular items are defused Second World War hand grenades. He sells two kinds—good and rusty. Sometimes I could hear him calling on the loudspeaker to an assistant in the storeroom beneath me, "Danny. Bring me two *good* hand grenades, and two *rusty* hand grenades."

Some of what I know about Gary: he

is forty-three years old; he lost relatives in the Holocaust; he spent a happy childhood in Israel, with a car, girls, trips to the beach; he lived for a time on a youth kibbutz, where boys occasionally swam naked with American girls; he moved without his family from Israel to New York to Canada; he once had a job in Toronto making the molds for three different sizes of Tek plastic toothbrush handles; he is handy with locks; he moved back to New York after his family moved there from Israel; he likes living in Forest Hills, Queens, because every morning on his lawn he sees ("Danny, what are those things I see in my yard, that I like?") squirrels; he has two brothers, one who manufactures corrugated-cardboard boxes and one who has been a caretaker-cashier in an S & M club; he works six or seven days a week, from ten in the morning to seven at night; he smokes cigars so strong that I could smell him coming up the stairs; he wears a little gold hand grenade on a chain around his neck; he likes to eat yellow rice from the Cuban restaurant, and it leaves a mustache; he has no real laugh, just a loud bark of sarcasm, triumph, or joy; his father was a scrap-iron dealer named Leo. I got to know Gary a first-day-of-the-month at a time, as I brought him my rent. One April 1st or October 1st, he said to me, "I should get married—it's time." He began to subscribe to a publication called *Jewish Singles*, which he received at our building. One night, a friend who was visiting me saw *Jewish Singles* by the mail slot as he was leaving, took it home, and then called me to read me excerpts. I made him bring it back. At a dance, Gary met an American girl some years younger than he, and they were married. They named their first son Leo, after Gary's late father. Leo is now nine. Gary says, "When I bring him to Canal Street, I want to attach him to me by handcuffs."

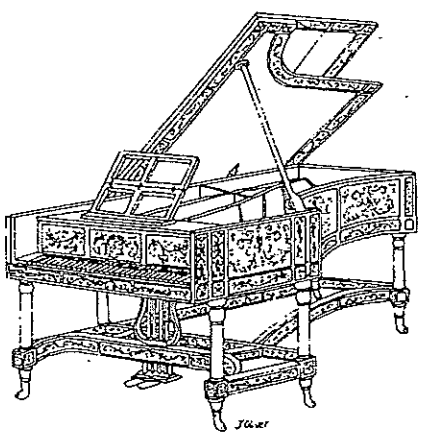


On sunny weekends, Gary's store is so crowded that you have to turn your shoulders sidewise and sidle through. Gary's men Danny, Ezra, Mark, Kabul, Jeff, Eric, Walter, and Abbas watch the crowds. Customers Gary especially mistrusts do their shopping surrounded by his men, more or less in custody. From a raised step behind the cash register, Gary says to me, "See those bleck guys—they're t'ieves. If you ever see those guys around here, call the police. Danny. Abbas. Will you help these gentlemen, please? That white guy, with the earring, he's a junkie. He beats that girlfriend with the sexy T-shirt. He wanted me to sell him some Mace, I said, 'I'll sell Mace to her, not to you.' The Japanese kid there—A No. 1. Japanese A No. 1 people in the *world*. He will spend a hundred and fifty dallah, at least. Japanese, I kiss their foot. That guy with the hat, he's a lawyer, a Chassidim. He's a rich guy, he don't want to share, always wants me to give him some kind of deal. He's hungry, like a typhoon. That other guy's a lawyer, too. He's sharp, are you kidding me? He's English, like the Beatles. (Yes, Zippo lighter, best lighter you can buy, it will burn for twenty years. Don't forget your brochure. Thank you.) That big guy? With the big hands, like baseball gloves? He's Russian, came over to Brighton Beach ten years ago, now he's the toughest landlord, the best landlord, in New York. Compared to him, I'm like a baby sheep. When the tenants don't pay the rent—POW!—he smacks them in the head. Russians don't play, you know. See those two guys? Out on the street? They'll come in in a minute. They're Arabs—P.L.O. They speak Yiddish ten times better than me. They buy a lot of stuff here—clothes, equipment—but no knives or nothin'. I know they would probably kill me, but then business is business."

Although the people Gary is talking about are only a few feet away, they don't hear him. Gary not only speaks several languages—Romanian, English, Yiddish, Hebrew, Greek, some Turkish, some Arabic, some Spanish —but also speaks in several frequencies. He has different channels for conversations with suppliers, customers, employees, and members of his family. In situations where he does not want to use words at all, he resorts to an ultra-high frequency consisting of eye gestures, winks, and headshakes. These signs might mean Yes, No, Shut up, Look out, or I'll explain later. One day, some atmospheric scientists down in Delaware were performing cloud-seeding experiments on a thunderstorm and perhaps the storm got away from them because one came up the coast and

hit New York City at about eight in the morning and dropped more rain than had ever fallen on the city on that date in the history of weather reporting. I was lying on my bed looking out my back door at the fire-hose stream coming from the broken drainpipe of the neighboring building and listening to the rain on the fire escape when suddenly I realized that some of the falling-water sound was coming from inside my apartment. I got up and saw water coming through my ceiling everywhere. I was on the third floor, with two floors above me. I ran to the roof, which is flat and bordered by a waist-high wall, and found it knee-deep in water. I ran down and got Gary, and we waded back onto the roof, and he reached his arm into a drain up to the shoulder and fished some trash out of the filter, and the water formed a big whirlpool and roared down the drain. A few moments later, we heard small cries from the street. The storm drain in the building's basement, unable to take such a volume of water, had instantly backed up, and two guys working in a little room down there had almost drowned in the flood. Thousands of dollars' worth of stuff Gary had stored in the basement was ruined. The tenant on the fifth floor, a costume designer, lost a lot of property, including several life-size frontal male-nude portraits, which he valued at some thousands of dollars each. The costume designer asked Gary to pay for the damage. Gary called his insurance man, who came by and took a tour of the costume designer's apartment with an expressionless face. Back on the street, he said to Gary, "Did you get a load of those naked guys!" and he began to laugh. The insurance company supposedly refused to pay for all the damage. Gary offered the costume designer a smaller amount than he had asked for. The costume designer refused it, and sued Gary. Gary sued him back. Gary offered him money to leave, and he also refused that. One afternoon, someone broke into the costume designer's apartment and slashed up what remained of his stuff. The costume designer said he was sure Gary was responsible, and I said I could see how he might think that. Gary called me into his store and said, "How could you *say* such a thing, I would never *do* such a thing." I said, well, O.K., but now I was worried about my apartment. How did I know a break-in like that wouldn't happen to me? With the tiniest of gestures, just between me and him—a slight downturning of the corners of the mouth, a hooding of the eyes, a shake of the head—Gary indicated that it wouldn't.

BEFORE Gary bought the building, in 1976, it was the Knickerbocker Candy factory. Some of its pipes ran caramel, and there were gobs of crystallized caramel on the walls. When I moved in, my floor still had hundred-pound sacks of imitation coconut flakes lying around, no john, and no door. Back then the rent was three hundred and twenty-five dollars a month. Strangers used to walk in and ask me how much rent I was paying, and when I told them they would laugh in my face. Now a rent that low in this neighborhood would be unheard of. I had to hire a dumpster to get rid of all the candy-factory relics in my place. At first, I used the john at the Mobil station across the street. Then I hired a guy named Larry to install a bathroom. Larry was from Brooklyn, and he said he remembered visiting this building on a field trip when it was a candy factory and he was a kid in elementary school. He charged me eight hundred dollars, which I asked my mother for. She said she would be glad to help, and when I said how much I needed, her mouth dropped open. But afterward she gave me a check, enclosed in a greeting card. For a few years, I had just a bathroom and a bed and a phone —no kitchen, no TV or stereo. In the blackout of '77, I hunted all over the floor in the dark for the ringing phone, and when I found it, it was my mother calling to be sure I was all right. Eventually, I put in a new floor, so that it was possible to walk without shoes on, and a kitchen, and walls around the bathroom. The neighborhood, meanwhile, was getting tonier and tonier, and rents were climbing, and I could see Gary calculating. I had a five-year lease, but after three years I told Gary that I could afford to pay more. I said that from then on I would pay a hundred and fifty dollars a month more. Gary's eyes softened with wonder and love. To this day, he says, "Sandy, you don't know what you did to me. You touched me here"—with a finger to his sternum, next to the nametag that says "McCoy."



At the time, people told me I was crazy to raise my own rent. But it turned out to be one of the smartest things I've ever done. After the flood, the building entered a long period of feuds, suits, and countersuits, which I was able to stay out of. The feud between Gary and the costume designer went on for years. The guy on the fourth floor—below the costume designer, above me—also sued Gary over the water damage, and Gary alleged in a countersuit that the trash that had clogged the roof drain and created the whole problem had been left there by that guy in the first place, when he used to lie on the roof and sunbathe. Because just a single layer of boards constituted both my ceiling and that guy's floor, I knew him well, although we rarely spoke. I could hear when his cat jumped off his kitchen counter. The fights the guy had with women no amount of pillows on my head could drown out. Sometimes he and the women threw crockery at each other, and shards rained down on me through holes in my ceiling. The guy was a technician for a television studio when he moved in, but later he became possibly a drug dealer, possibly some other kind of criminal. His telephone rang non-stop. Once, it rang so long it made me fret and start to pace around. I decided to time it, and the continuous rings went on for twenty minutes, thirty minutes, forty. I was now breathing hard and talking to myself. I stood up on a ladder and looked through a hole in the floor. By standing on tiptoes I could just make out his phone, ringing away on the wall. I happened to have a long section of half-inch copper pipe, which the plumber had left, and experimentally I pushed it through the hole, past his chair, past his kitchen counter, past his dish drainer. The pipe was just long enough to reach the bottom of the phone receiver. I lined everything up

as if this were a long pool shot. With a little tap, I knocked the phone off the hook, and it swung and dangled from its cord. The silence was sweet. Then I began to feel guilty. I wrote the guy a note explaining what I had done, and left it on his door. I heard him come home at about three in the morning, I heard him unfold the note, I heard him laugh. A few minutes later, a note slid under my door. The guy was a fan of Pauline Kael, and she had heavily influenced his prose style. He said he imagined the building's plumbing in "a macabre, twilight zoney revolt of anthropomorphic metals." I couldn't think of anything to respond, and did my best to avoid him for the next several years.

WALKING east on Canal Street from Gary's building, you might have passed an electronics store with a pile of computers in the trash out front and a man picking through the pile, yanking out panels of circuitry like honeycombs from a hive; a onetime nice diner now taken over by heaps of VCRs and clock radios and radar detectors in cardboard boxes sold at cut rates by a family of Moroccan Jews who wear headphones outside their knit caps and park illegally during rush hour and litter the sidewalk with packing material and call their store "Big Zubby," which means something dirty in Arabic; the 3 Roses Bar, which changed the color of its crêpe-paper decorations for each holiday, and which used to be filled with black working people and then began to attract young white people and then moved to 311 Church Street; a flea market in the parking lot next to the post office with gilt picture frames priced at five dollars each accidentally framing the Day-Glo graffiti on the wall behind them; Uncle Steve, a TV-and-stereo store where the owner did his own radio commercials, which ended "I *lo-o-o-o-ve* you"; Ollie (Something), a tall West Indian man in a leather skullcap who sold old record albums and old copies of *Playboy;* the intersection of Canal and Broadway, a famous intersection, which has appeared on television, in movies, and in a realistically detailed sculpture by Red Grooms now on display at the Cleveland Museum of Art. In the next block, Chinatown begins. The Excellent Dumpling House, near the corner of Canal and Lafayette, announces it with the ozone smell of oil heating in a wok. If the time is between October and New Year's, Christmas carols in Chinese are playing from the leather-goods, makeup, jewelry, and videotape store by the Lexington Avenue I.R.T. subway entrance. Carp show the red of their gills as they gasp in the milky water of a big metal tank in a seafood store at the corner. One carp swims upside down.

Farther on, you might have seen Chinese-vegetable stands, with their crates of non-supermarket produce—lotus root, and white carrots, and green carrots, and Chinese chives, and water chestnuts, and wrinkled bitter melons —which the people who work there are sick of telling tourists the names of; a store that sells mostly shellfish, and has a wooden counter full of sea-colored lobsters writhing in very slow motion beneath a sign saying "$6.50 LB. NO PICTURES"; sidewalk venders selling live crabs and assorted mushrooms and pieces of dried shark stomach; a sign advertising the House of Watch; lots of jewelry stores, with clerks in the windows arranging necklaces on velvet stands shaped like headless necks; black security guards in front of the jewelry stores flirting with women wearing gold charms in the shape of the Dominican Republic; a shopping arcade where (according to the *Times*) young ethnic-Chinese refugees from Vietnam hang out between errands of extortion against local businesses, which they perform for the Chinatown gangs. Police think some of the refugees belong to a gang that killed two members of another gang in 1988 near 269 Canal. If the time is between Memorial Day and the Fourth of July, Chinese kids and Italian kids wearing white shorts, sneakers, no shirts, and towels around their necks try to sell you fireworks. The sidewalk here is narrow and polished smooth by feet. Some days, the crowds are so thick that people come to a complete stop and stand and wait.

Just beyond the intersection of Canal and the Bowery, across an asphalt expanse of traffic lanes and concrete dividers and yellow stripes painted on the pavement, is the arch at the entrance to the Manhattan Bridge. Traffic going to and coming from the bridge drives on ramps around long, columned wings extending from either side of the arch. Depending on the time of day, traffic going one direction or the other

drives under the arch itself. The arch is maybe forty feet high, embellished with goddesses of victory, shields, fasces, tridents, spears, flags, helmets, winged lion heads. Across the top of the arch, in bas-relief, is a frieze of Indians on horseback hunting buffalo. The Indians draw their bows all the way back among a galloping herd of adults and calves. One horse prances on its hind legs. At the keystone of the arch, a buffalo head looks down on the tops of passing trucks. An afterthought of twin steel cables stretched from one leg of the arch to the other holds yellow traffic-signal boxes. Along the wings of the arch, in between the columns, people with no place to live store folded-up cardboard cartons, plastic bags of clothes, a laundry cart, sneakers, a broom. Sometimes sanitation men come along and clean this out, and then all that is left, on a ledge at the base of a column, is a single plastic vial of those scented oils people sell in the subway. Windrows of trash pile up on one side of the traffic dividers that route the cars coming off the bridge. As you approach, pigeons leap from the trash like flames.

Actually, Canal Street does not stop at the bridge but angles off to the east for eight blocks. Here it is not an artery but just a Lower East Side street. Guys lie in it to work on their cars. The gutter holds blue safety glass from a shattered car window, birdseed, a squashed gherkin, puddles of fluorescent-green radiator coolant. Nobody yells at trucks that double-park. A Chinese man standing at the back of a truck loads garments that come to him down a long cord strung directly from the truck to a window on the top floor of a nearby building. Pastel sports shirts on hangers descend one after another in five-story swoops. On this part of Canal Street, Chinese businesses mix with kosher delis, locksmiths, upholstery stores, and Chassidic hardware stores, which are closed on Saturday. Just below Canal is a network of narrow streets centuries older than the bridge roaring above them. It is Chinatown, but not the part where conventioneers come to eat Chinese food. Some of the side streets are so narrow they barely have curbs, much less sidewalks. Flatiron buildings almost small enough to put your arms around occupy tiny wedge-shaped lots. Gentrification has left this place untouched; rents here are probably about the same as they were in Carthage, or Nineveh, or Peking under the Tangs. Shoes have worn shallow depressions in the stone of apartment-house steps; hands have polished the paint off railings. Ancient paint on door lintels is cracked and ridged like alligator hide. This is the basic city that people have always lived in, of which the rest of New York is only the twentieth century's approximation. Market Street, which runs parallel to the bridge just south of it, angles down to the blue of the East River like a lane in a seacoast town.

In the Sun Sing Theatre, on East Broadway directly under the bridge, in the middle of the day, two dozen Chinese men in white short-sleeved shirts are watching a movie about the adventures of a fisherman from mainland China who comes to visit his more sophisticated relatives in Hong Kong. Outside, little kids with backpacks and with the hoods of their jackets drawn tight around their faces run to meet their mothers. Some teen-age kids walk by singing a song about you've tried the rest, now try the best. Big yellow Chinese characters painted on the sidewalk translate as "Seriously no park car." In a store on Henry Street filled with small, bright birds in wooden cages, two men unroll and discuss an illuminated Chinese scroll. Sparrows on a fire escape across the street answer the birds singing through the open door. A few doors down, guys in red smocks are laughing in a printing store that sells mainly Chinese-restaurant menus. A boy goes by wheeling a long-haired white cat in a wheelbarrow. At the corner, a woman cobbler has set up her bench. She bends over and saws at the heel of a burgundy leather boot while its wearer holds on to a street sign for balance. A mounted Norman Rockwell print of a red-cheeked cobbler leans against the wall nearby.

WALKING west on Canal, away from Chinatown, toward the Hudson River, you can understand why people who drive this street become so upset. In the course of its half mile or so, they are going a long way—from the Old World to the New, or vice versa. If the eastern end of Canal Street is Nineveh, its western end is Brasília. When you head in this direction, each intersection seems a little less ethnic than the one before it, and there is a scent of the American continent up

ahead. At certain times of year, the red sun sets right at the end of the street. Westward, the buildings get bigger and farther apart, with growing vistas of sky between. The light and the space probably tempt drivers to think they are about to soar onto one of those empty skyways of the car commercials, when in fact they're not. At the river, just beyond the cars speeding by on the West Side Highway, the island ends like a piece of paper on a table. A plaza at the foot of Canal is empty except for some cars and a collection of snowplow attachments the city has lined up in rows. Fewer horns honk here. On the opposite bank, you can see the lights of Jersey City and Hoboken and farther upstream. The water is unoccupied, the sky as big as any in Manhattan. Eighty years ago, right at the river's edge is where the worst traffic jam was, as cars, trucks, and horse-drawn wagons waited to get on the several ferries across. The sky and the water here used to be almost invisible for the piers and shipping warehouses. Now a few splintery pilings are about all that remains. As the sun goes down, the sky becomes a darker blue, and you can make out the lights of airplanes at different altitudes above Newark Airport.

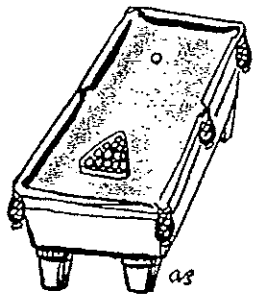
Westbound traffic on Canal Street does not soar but instead descends slowly three blocks from the river into the entrance to the Holland Tunnel. Few tunnel-bound cars have any passengers besides the driver. Guys prop the *Post* on the steering wheel and read as they wait to roll the next few feet. Traffic reports on the radio sometimes predict delays of over an hour. Weighted yellow cylinders hanging from a cable just before the tunnel entrance bump the top of any truck taller than twelve feet six inches, and an electric eye sets warning bells ringing, and brings a cop running from a little booth. A sign above the entrance says "12'6" WE MEAN IT!" In fact, clearance in the tunnel is thirteen-six, but the tunnel authorities leave themselves an extra foot in case a broken vehicle needs to be jacked up for repairs. Trucks roar and creak their way into the tunnel, and give off enough exhaust to make the air here some of the most heavily polluted in the city. Set back in a niche at the tunnel entrance, like a man eternally waiting to cross, is a bronze bust of Clifford Milburn Holland, the engineer who designed the tunnel and worked himself to death building it.

Clifford Holland was born in 1883, in Somerset, Massachusetts. Among his ancestors were Puritan ministers who came to New England in the sixteen-hundreds. Holland graduated from the Cambridge Latin School in 1902, worked his way through Harvard, got a degree there in civil engineering in 1906, and came to New York to work on tunnels. As tunnel engineer with the Public Service Commission, he built four double-tube subway tunnels under the East River that the B.M.T. trains run through. In 1919, partly to relieve traffic congestion downtown, a new agency called the New York and New Jersey Vehicular Tunnel Commission decided to build a tunnel under the Hudson River, from Canal Street to Twelfth Street in Jersey City. They hired Holland as chief engineer to design and build it. At the time, Holland was probably the country's leading expert in the shield method of tunnel construction. This method uses a steel-plate cylinder, or shield, which is driven into the earth by powerful jacks at its back edge while men remove the rock and the dirt in the middle. As the shield advances, a tunnel wall of iron rings is set in place behind. One benefit of the method is that the shield can be divided into sealed compartments, and filled with compressed air to counteract the pressure of water; that allows subaqueous tunnelling through wet substances like silt. The bottom of the Hudson is many feet deep in tiny particles of granite, sand, and basalt eroded from the rocks along its banks—"plain, black mud," as Holland described it. Holland's plan called for two parallel tunnels, one for eastbound traffic and one for westbound. In October of 1922, the first shield began digging toward New Jersey from the intersection of Canal and West Streets. The joint tunnel commission had budgeted twelve million dollars for the project, and paid Holland a starting salary of ten thousand dollars a year.

The Holland Tunnel was the first tunnel in the world designed for motor traffic. Holland and his staff spent a lot of time finding a way to get combustion gases out of the tunnel, and finally

devised a system using ventilating shafts, giant blowers, and ducts below the roadway and in the ceiling for outgoing and incoming air. Like many of the automobile drivers in the Canal Street traffic jam today, Holland was a commuter. He belonged to the first generation of men who drove to work from the suburbs in cars. Holland lived in Flatbush, in a three-story house with a yard and a driveway, at 2416 Avenue J. He had a wife, Anna, and four daughters—Anne, Clarissa, Venita, and Lydia. Lydia was only a year old when digging on the tunnel began. Today, Holland's old neighborhood is occupied mostly by Hispanics and Orthodox Jews. Crowds of strollers with clear-plastic covers fill the crosswalks at eleven in the morning, and the only trash among the well-trimmed hedges is an empty bottle of a vitamin that claims to improve fertility. Nothing about 2416 distinguishes it from hundreds of other brick-and-stucco houses extending for miles along Avenue J.

There is no reason to expect that a man who built a famous tunnel should be remembered, or that the house his body was brought back to should have a plaque in the yard. The urge to tunnel is partly an urge to disappear, and its product, no matter how monumental, is visible only from the inside. People have written scores of books on the Brooklyn Bridge and its engineers, the Roeblings; the only book on the Holland Tunnel is a sixty-eight-page volume put out by the company that built the tunnel's ventilating fans. One of the authors of that book visited Clifford Holland inside the tunnel, and described him joking and relaxing in the pressurized air of the shield's forward compartment while work went on around him. In photographs aboveground, Holland appears as an inconspicuous business-suited man of less than average height with a bullet-shaped head, sloping shoulders, and rimless spectacles. His body angles slightly away from the camera; he seems to blink in the light. It is hard to avoid the observation that he looks like a mole. "Head Mole" was how the newspapers sometimes referred to him. Tunnel workers liked him. Construction bosses said that Holland could persuade them to efforts that no one else could.



Digging tunnels is so difficult and dangerous and unlike other kinds of work that it amounts to a vocation. The laborers who do it call themselves sandhogs. Because of the physical demands of the job, and because the sandhogs often worked in the shield's forward compartment under air pressure up to fifty pounds per square inch, they had to pass regular physical exams. They were not supposed to be over thirty-nine, but many were. Working in pressurized air is enervating, and the sandhogs' union would not allow shifts of more than four hours; as the pressure went up, the shifts became shorter and the pay greater. The highest-paid sandhogs earned eight dollars and fifty cents a day. Under the river, beneath bare light bulbs in the advancing shields, with the smoke of blasting hanging permanently in the gloom, and the racket of pneumatic grouting machines echoing off metal walls, the sandhogs picked and shovelled at the slaty gray bedrock. In this intense, pressurized atmosphere, a cigarette burned down to a butt in three puffs, and it was impossible to whistle. Entering or leaving pressurized air, the sandhogs had to pass through an air lock to accustom their bodies to the change. A sandhog who became impatient to go home and left the air lock too soon was liable to get the bends, a painful and occasionally fatal condition produced by bubbles of nitrogen in the blood, which could make him stagger as if drunk, fall down, and lose consciousness. Sandhogs wore medical ID bracelets around their wrists in case they should be overcome by the bends away from the job.

Sandhogs are a tribe, with their own rituals, myths, and hero tales. Many sandhogs are related to one another. Sitting in the air lock, or showering after their shift, or drinking in a sandhogs' bar, they tell stories. The favorite sandhog hero tales are about men who have been in blowouts and survived. A blowout is a catastrophic event in tunnel construction which occurs when the pressure of air inside the shield suddenly becomes greater than the water pressure in the material the shield is tunnelling through. If the

shield happens to hit a seam or a bubble or a weak spot underground, the pressurized air in the shield will sometimes blow right up through the river bottom, through the river, and into the sky in a tall geyser, taking men and equipment with it. Among the most famous sandhog heroes was a man named Marshall Mabey, who survived a blowout that shot him through yards of river bottom and onto the top of a geyser twenty-five feet above the East River during the construction of the I.R.T. subway tube to Brooklyn in 1916.

When the Holland Tunnel was built, it was the longest subaqueous tunnel in the world. New York and New Jersey both ended up spending more money on it than they had ever spent on a local work before. The tunnel used a hundred and seventeen thousand tons of cast iron from mills in Pennsylvania, hundreds of miles of steel reinforcing rods, eight hundred thousand ten-pound bolts, a billion five hundred million board feet of lumber from Georgia and Oregon, steel-and-concrete caissons made in Staten Island, granite paving from New England, and concrete from Cementon, New York. It employed seventeen hundred men (including the undaunted Marshall Mabey). At the height of construction, six shields were digging the tunnel and its approaches —two shields heading west from Manhattan, two heading east from New Jersey to meet them, and two more digging land entrances in Jersey City. Work went on seven days a week, twenty-four hours a day. After spending all day at the site, Holland often came back in the evening to see how work was progressing.

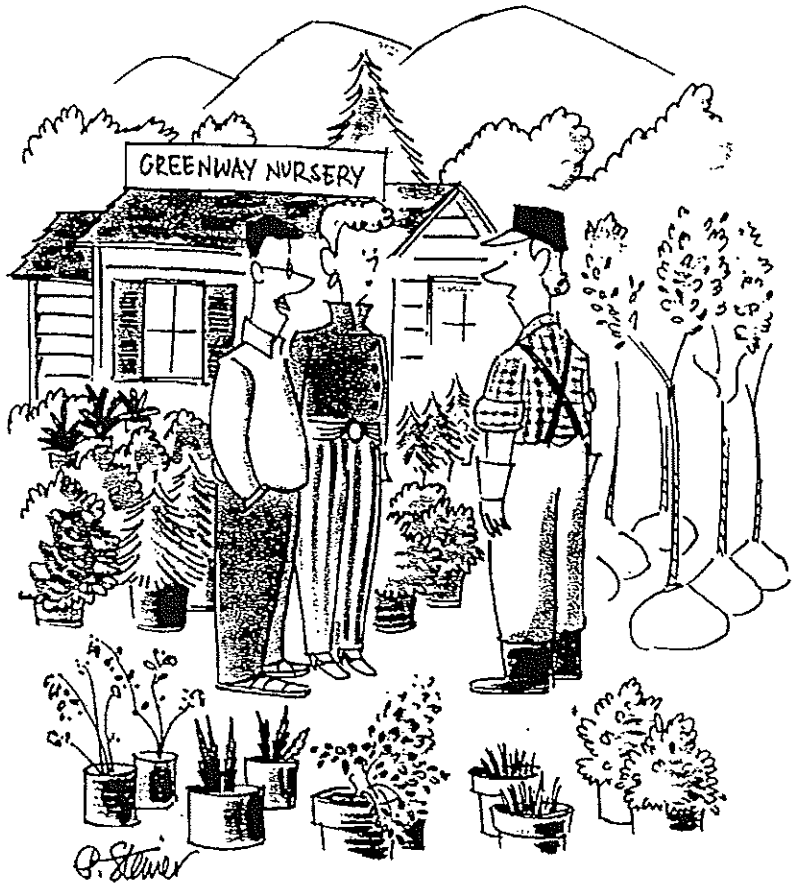
In Manhattan, the work went slowly. The two shields—the second one began digging from the corner of Spring and West Streets in April of 1923—took many months to go the few hundred feet from their starting points to the edge of the island. The problem was that their routes underground led not through natural mud or rock but through all kinds of miscellaneous landfill and rubbish that Manhattanites had been dumping along the edge of the island to enlarge it for over two hundred years. There were no records of when this land was filled or what it was made of, so Holland did not know what to expect. Mostly, the fill consisted of waterlogged cribs of immense rough-hewn planks enclosing piled-up heaps of granite in chunks. In the high air pressure needed to hold back the sand and the ooze, sandhogs sawed the wood and blasted the rocks. A canal that had been dug in 1805 to drain a pond where Foley Square is now—the canal that gave Canal Street its name—apparently also washed a lot of rock and brick and ancient refuse to the river's edge. Before or after the canal was covered over, in 1820, it was lined with bricks, to make the largest storm drain in the city. Holland had to reinforce these old bricks with iron plates as he tunnelled carefully past. He also came within five feet of a cofferdam at a sewage-treatment plant at West Street, and almost as close to several gas lines, water mains, and electric cables. Some days, the shields moved forward only a few inches, or not at all. Holland said that every foot of tunnel progress in Manhattan was a new story.

On the New Jersey side, where sedimentary mud was hundreds of feet deep, Holland expected progress to be much more rapid. But there his biggest problems turned out to be aboveground, in the form of the New Jersey Interstate Bridge and Tunnel Commission. This group was half of the New York and New Jersey Vehicular Tunnel Commission. A nine-member commission from New York made up the other half. The two halves did not get along. The chairman of the New Jersey commission was a man named T. Albeus Adams. He praised the project with a speech to the effect that this tunnel would be like Lincoln's proclamation freeing the slaves, but even before digging had begun he was accusing the New York commissioners of denying him adequate desk space in the offices the commissions shared, on

Centre Street. This dispute continued for some time, until an acceptable desk was installed. A more serious argument had to do with the tunnel entrance in Jersey City. The New Jersey commissioners thought its design insultingly small; they wanted a big plaza, and widened streets leading to it. The New Yorkers thought the Jerseyites were trying to improve their city unnecessarily at the tunnel's expense. Whenever the subject of street widening came up at joint commission meetings, people shouted and stalked out. Neither side would yield. New York prepared to sue New Jersey in federal court; New Jersey said that the governors should step in. Holland and a consulting engineer on the New Jersey commission devised a compromise plan for the plaza, which both sides seemed to accept. Then the commissioners disagreed about the construction in the plaza of a ten-thousand-dollar stone-and-bronze monument honoring both commissions, which New Jersey said was New York's idea and New York said was not. The delay continued. Finally, Holland and a small crew secretly went out to Jersey City just before dark one evening and broke ground for the tunnel themselves. One of the Jersey commissioners referred to this as a "contemptible, mean trick" seven times at a commission meeting. Later, when workmen tried to do further tunnel construction on the Jersey side, the Jersey City police stopped them for not having the proper permit. Eventually, months behind schedule, work in New Jersey did begin. The joint tunnel commission had long planned an elaborate formal groundbreaking there, with ten thousand guests and President Harding to attend. When the time came, the two sides of the river were so fed up with each other that the celebration was cancelled.

After tunnelling through Manhattan landfill all winter, the shield that had started from the intersection of Canal and West Streets entered the silt at the bottom of the Hudson River. Here progress went five times as fast. When the shield was well out under the river, eleven hundred and thirteen feet from its starting point, it encountered a wall of rock extending in front of it for eight hundred feet. This rock was Manhattan schist, part of a formation that extends to the Jersey Palisades

upstream. Progress again slowed, from twelve and a half feet a day to less than a foot. The shield digging the parallel tube west from Spring Street hit the same rock a month or so later. Because the rock face did not extend all the way to the ceiling of the tunnel, Holland had to be especially careful in gauging the force of the dynamite charges he used. The blasts had to be strong enough to break the rock without damaging the shield or disturbing the silt at the ceiling. Despite precautions, at 7:45 A.M. on April 3, 1924, water began streaming through a hole in the two feet of silt at the ceiling of the Canal Street tube. Sandhogs tried to stop the hole with bales of hay, but, in a sudden hiss of escaping air, it grew into a tear twenty feet long. As water gushed into the shield, a foreman, David Brown, shouted, "Run for your lives, men!" Thirty-five sandhogs scrambled through the shield's escape hatch and up the tunnel with the incoming river at their heels. Meanwhile, a fifty-foot geyser of compressed air shot through the hole and into the sky over the Hudson, nearly capsizing a cement barge. The sandhogs made it up the slope of the tunnel before the water, and no one was injured. Additional air pressure drove the water from the tube, and the hole in the river bottom was plugged with two bargeloads of clay.



"I think we're ready for a tree."

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In addition to solving engineering problems never before encountered in tunnel construction—such as anchoring a ten-thousand-ton caisson for the west ventilating shaft to bedrock through two hundred and fifty feet of riverbed muck, and designing metal joints so the tunnel could move fractions of an inch with changes of temperature and the action of the tides—Holland continually had to explain things. He had to explain why a concrete tunnel, championed by T. Albeus Adams, would probably float, and why two smaller tunnels were better than one big one, and how the money spent on the New Jersey entrance plaza was actually more than that spent on the Manhattan plaza, and why work was going so slowly in Manhattan, and why it made more sense to hire an experienced tunnel-construction firm rather than an inexperienced one championed by T. Albeus Adams, and why the tunnel was going to cost sixteen million dollars more than the original estimate (it eventually cost a total of forty-eight million dollars), and why he refused to allow an engineer hired at the urging of a New Jersey commissioner to leave work for a week to get out the vote for the Hudson County Democratic organization. Over and over, he explained to people worried about carbon-monoxide poisoning how the tunnel's ventilation system would work; when a traffic jam in a tunnel in Pittsburgh ended with hundreds in the hospital, he explained why that couldn't happen here. As the tunnels reached midstream, construction sometimes delayed the departures of cruise liners, to the annoyance of society swells on board. In detail, Holland explained the routes through the construction that cruise ships could take, and why the mounds of clay on the river bottom that they had to avoid were necessary to protect the workmen below.

By the late summer of 1924, the shields tunnelling west from Manhattan were within a few hundred feet of the shields coming east from New Jersey. Everyone awaited the "holing through"—the moment when east and west shields would meet and the first tube would finally go all the way from one end to the other. Newspapers said that the tunnel was approaching its zero hour, and that the engineers were lying awake nights worrying that the meeting would not be exact. Tunnelling simultaneously from both sides of the river, Holland was like a person drilling holes through opposite sides of a block of wood; if the holes didn't meet, the project would be ruined. Each shield had an instrument man who kept track of the shield's position inch by inch. Holland stayed in close touch with the instrument men to hold the shields exactly to line and grade. Once the hole was made, there could be no correction. Holland hoped for a margin of error of less than an inch. Despite a weak heart, which he had had since youth, he went in and out of pressurized chambers many times a day. His wife saw that the work was a

strain on his health. "If I had known that it was sapping his strength so much, I would have urged him to be more careful," she said later, "but he was so completely wrapped up in his work that I really do not know if my pleadings would have had any effect." On September 27th, the two shields digging the northern tube were within a hundred and sixty-five feet of each other. A meeting was expected within a month. The first week in October, Holland had a nervous breakdown. The joint tunnel commission adopted a resolution giving him a month off with pay, and a second month if he needed it; uncharacteristically, no one dissented. Holland went to the Battle Creek Sanitarium, in Michigan. His friend Robert Ridgway, the chief engineer for the New York Board of Transportation, went to visit him a few weeks later, and Holland stayed up late talking about how much he wanted to finish the tunnel. Sad not to be returning himself, Holland saw Ridgway off at the train station. That night, Holland had a heart attack and died.

Two days later, the tunnel's northern tube was holed through. Again, the tunnel commissions had planned a celebration: the President (now Coolidge) would press a gold-and-platinum telegraph key in the White House library, which would touch off a blast removing the last eight feet of rock between the two halves of the tube; radio station WOR would broadcast the sound of the blast to the tri-state area; a band would play "The Star-Spangled Banner"; governors and senators would observe. Out of respect for Holland, no celebration was held. All the workers decided to treat the event as part of an ordinary day. A few minutes after the blast, when the debris and the smoke had cleared, the New York superintendent of the work crawled through a small hole in the wall and shook hands with his counterpart from the Jersey side. The sandhogs did not cheer. When the remaining rock and mud were cleared away, it was found that the two borings diverged from each other by three-quarters of an inch.

Holland's body was brought back from Michigan to 2416 Avenue J, Flatbush, and after a memorial service in Brooklyn he was buried in Somerset, Massachusetts. In a letter to Governor Alfred E. Smith, of New York, Theodore D. Pratt, the general manager of the Motor Truck Association of America, suggested that the new tunnel be named the Holland Tunnel. Soon afterward, the joint tunnel commission agreed to this idea, and the Hudson River Vehicular Tunnel (as it had been called) became the Holland Tunnel. The southern tube was holed through a month after the northern tube. Anna Holland and her four daughters moved from Flatbush to Cambridge, Massachusetts. The tunnel's twin tubes were lined with concrete, ventilated, paved, tiled, lit, and opened for traffic at one minute after midnight on November 13, 1927.

When the tunnel commission hired Holland as engineer, in 1919, he had insisted that several men who had worked closely with him in the past be hired also. Milton Freeman, his second-in-command, who took over for Holland at his death, knew Holland's plans and methods so well that the work continued with no interruption. Freeman's dedication was at least as great as Holland's. "Mr. Freeman practically slept in the tunnel," Anna Holland recalled. On March 24, 1925, five months after becoming chief engineer, Milton Freeman died of acute pneumonia. The tunnel commission honored him by naming the Manhattan entrance plaza Freeman Square; today, that name has been forgotten. Holland's third-in-command, a man named Ole Singstad, took over from Freeman, and survived to the end of the project. Besides Holland and Freeman, thirteen sandhogs died building the Holland Tunnel. The *Times* gave their names as Philip Healey, Steve Rolzek, Christopher Kelly, John Hues, Joseph Richard, G. J. Slade, Dennis Sullivan, John Taggart, Sezoy Palischick, Feodor Tarashicp, August Nevola, Charles Svenson, and James G. Godfrey. Other newspapers printed the same thirteen names but disagreed on some of the spellings. When the first shield began to tunnel west from Canal Street, Holland described the men "rejoicing as if we were giving a battleship its first spin." The men who built the tunnel had a rallying cry: "Ten minutes to New Jersey by wheel!"

As if Clifford Holland's profession, diffidence, and short life weren't enough, his name itself was the final guarantee of his anonymity. At the time the tunnel was named for him, editorial writers worried that people would think that the name had something to do with Holland the country. In later years, that happened. Today, almost no one knows who Clifford Holland was. When I asked where the name of the Holland Tunnel came from at Tunnel Discount Stationers, near the corner of Canal and Broadway, a guy behind the counter with a blue knit short-sleeved shirt and a mustache said, "I really couldn't tell you. Library'd be your best shot." When I asked at Tunnel Machinery Exchange, Canal and Wooster, a tall guy with a pockmarked face and a mustache said, "The name of the Holland Tunnel comes from the Dutch— No, you stumped me." When I asked at Tunnel Garage, Thompson and Broome Streets, a guy with a gray-and-black knit shirt and a mustache said, "Ask at the tunnel. For us, it is a little difficult." A traffic cop at the intersection of Canal and Sixth said, "I couldn't tell you that one, pal. I sure couldn't." A fireman by the firehouse at Canal and Allen said, "I have no idea. I imagine from somewhere over in the Netherlands." A woman in a blue jacket and black slacks at Lee Nam Sneaker, 316 Canal, said, "Don't know. Sorry." A gray-haired woman in a gray sweater at the cash register at Canal Deli Grocery, Canal and Greenwich, said, "I never even t'ought about it, frankly." When I asked Gary in his store one afternoon, he didn't know, and he repeated the question to the shoppers at large. A tall Japanese tourist with white hair at his temples who was comparing pairs of American and Israeli military goggles said, "It was named for engineer."

A plaque beneath the bust of Clifford Holland at the westbound entrance describes the tunnel as "the underground highway which joins a continent to a city." Gary has been through the tunnel only a few times; he is of the city. When I moved to New York from Ohio, in 1974, I thought of myself as a person from the continent. I made a point of how "American" I was, and spoke in a down-home accent that surprised my friends from the suburb I grew up in when they came to visit. I moved into Gary's building in the summer of '76, while the Bicentennial celebration was going on. From my front fire escape I could see all the way down Canal to a tall, thin slot of scenery at its end—a rectangle of Hud-

son River, a stripe of New Jersey, a column of sky. When the Tall Ships parade went by, each mass of sails seemed to cross this view in an instant, like a tiger sneaking from one tree to another in a cartoon. Back then, my fire escape was the only part of the apartment that did not need work, and I spent a lot of time out there staring westward. The sight of a truck from Storm Lake, Iowa, or Cape Girardeau, Missouri, heading down Canal to the tunnel was enough to make me happy. By concentrating on the sun on a peaked roof of a building downtown, I could imagine the sun on the roof of a boathouse in Michigan or a picnic kiosk in Nebraska—places I believed I would rather be.

The farthest west Gary has ever been is Caesars Pocono Palace Resort, in Pennsylvania, ten miles off Interstate 80 and just across the New Jersey state line. He spent thirty-six hours there with his wife some years ago—the only vacation I have ever known him to take. In the opinion of boosters of Pennsylvania who have put up a billboard that says "PENNSYLVANIA—AMERICA STARTS HERE" next to the interstate where it leaves New Jersey, Gary can say that he has been to America. His knowledge of its geography, however, is vague. The first time I told him I grew up in Ohio, he said, "Ohio, Michigan?" A large part of his America falls into an area known as Upstate. (Me): "I just came back from New Haven." (Him): "Oh—upstate?" In fact, his map of the country could be divided into thirds—Florida, California, and Upstate. When I sublet my place to my sister, in 1982, and moved to Montana for three years, that name suddenly appeared on Gary's map—alone and remote at the end of a long causeway, and occupied only by me. He pronounced it "Mon-*tah*-na." Since I returned, he has forgotten that name. Now he calls it "the place you went to."

In Gary's mind, America beyond New York is a land of no headaches: no traffic jams, no eight-and-a-quarter sales tax, no public-transportation tax, no water bills, no fire inspectors, no building inspectors, no lawsuits, no burglar alarms ringing in the middle of the night. He probably thinks of it as a giant slumbering baby: he often tells me it is my country, not his, and he often tells me I am a baby. "Sandy, Sandy, you sit up in a room writing, you like a baby, you don't know"—about the things people do to each other, about the Holocaust, about people paying off insurance adjusters, about how to make women behave, about black people on welfare laughing at me, about what the Palestinians would do to Israel if they had a chance, about how the rest of the world is waiting to come over here and take everything I've got. He says, "You an American, so you straight. But the world is not straight, it's crooked."

While I stand talking to Gary—which I still do, often—people come in and ask for rattraps, martial-arts equipment, gold braid, Mussolini youth medals, Civil War forage caps, earplugs, gas masks, white mosquito netting, wires to keep pants cuffs straight, camouflage paint, police whistles, flare guns, handcuffs, and holsters for guns of every description. One guy wanted to bring his Uzi machine gun from the car to see if the holster would fit. Another guy wanted to talk flashlights. He told Gary he would give his right arm for a certain model of flashlight. Then he went on about different kinds of batteries, bulbs, buttons, cases, and techniques of manufacturing flashlight reflectors. After the guy left, I asked Gary if he had any idea what the guy was talking about. He said, "If I did, would I be here?"

Recently, a developer offered Gary two and a half million dollars for his building. This offer did not delight Gary, despite the fact that he paid sixty thousand for the building originally. He said he would need two and a half million to buy a new building on Canal, so what was the difference? I told Gary he should take the money. I asked, "Don't you have a dream of something you'd like to do?"

"I'll tell you my dream—you'll probably laugh. I'd like to go to the place you went to."

"Montana?"

"Mon-*tah*-na. Yes. I'd go there, in the trees, with peace and quiet and no headaches. Give me ten million, not two, I'll go to Mon-*tah*-na, you'll never hear of Gary again."

—IAN FRAZIER

Lawrence Weschler
The Fiction of Nonfiction
{Form & Freedom}

Week Two (Form)

Susan Sheehan, *A Missing Plane* (Part II)

Lawrence Weschler, "My Grandfather's Last Tale"

Ernst Toch, Letter to a would-be composer

ALSO BY SUSAN SHEEHAN

Ten Vietnamese
A Welfare Mother
A Prison and a Prisoner
Is There No Place on Earth for Me?
Kate Quinton's Days

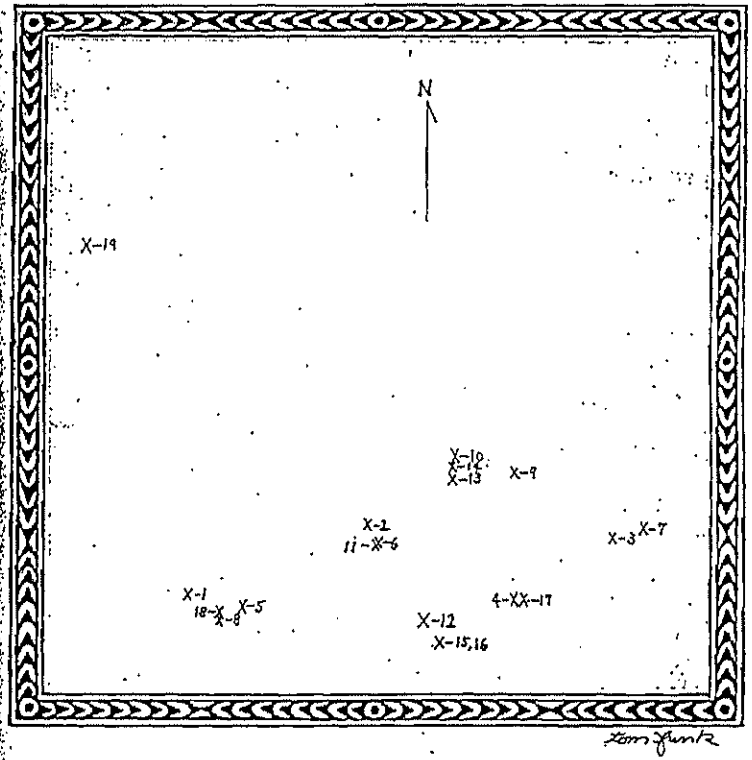
A MISSING PLANE

Susan Sheehan

G. P. PUTNAM'S SONS / *New York*

PART II

IDENTIFICATION



IT IS A TEN-MINUTE DRIVE from the airport to the Central Identification Laboratory, which in 1982 occupied half of a two-story cream-colored cinder-block building (No. 1027) and all of a one-story cream-colored cinder-block building (No. 1028) next door. The buildings are on a down-at-the-heels pier in the international section of the Honolulu port, in the midst of an expanse of blacktop used for unloading and storing cargo. The CIL's windows look out on containers filled with heavy machinery and pallets stacked with lumber—some of the least scenic vistas in the city. Most of the CIL's offices and its conference room are on the ground floor of No. 1027 (Army auditors are known to work overhead but are never heard and scarcely ever seen), and most visitors to the CIL are received in No. 1027. Building No. 1028, which was a United States Customs building in a previous incarnation, is surrounded by a barbed-wire cyclone fence. Affixed to one of its doors—the door that faces No. 1027 and is used most often—is a sign that reads:

NO SMOKING
IN RESPECT FOR THE DECEASED PLEASE REMOVE HEADGEAR
RESTRICTED AREA
AUTHORIZED PERSONNEL ONLY

In No. 1028 are the office of Tadao Furue; an identification-specialist's cubicle; a clerk-typist's cubicle; a small photography lab; and a good-sized records room. The walls of the records room are papered with maps of the world, of Vietnam, Laos, Cambodia, Korea, and Papua New Guinea. Fifty-two locked file cabinets, more than three-quarters of them containing records pertaining to the Vietnam dead, cover most of a linoleum-tile

floor. The majority of the building's floor space, however, is taken up by one high-ceilinged room. The room, known as "the lab floor," is almost 60 feet long and 50 feet wide, and Building No. 1028 is often referred to as "the lab." It was on the lab floor that the remains brought back from Papua New Guinea would be identified.

Just before the team's return, Leslie Stewart, an identification specialist, and a sergeant had taken eighteen collapsible stretchers from a storage shed behind Building No. 1028, had set each olive-drab stretcher on the lab floor on waist-high stretcher stands, and had covered each stretcher with a white sheet. Now they and several members of the team opened the olive-drab bags and put one large plastic bag on each stretcher. At the back end of the lab floor were a number of storage racks; on them were stretchers holding remains that could not be identified or were awaiting processing. The remains from the Mt. Thumb B-24 were to spend a few weeks on the storage racks, but for most of the next eight months they were to be on the lab floor.

On May 13, Leslie Stewart and two other men started to wash the remains from the B-24 in two sinks in a corner of the lab floor. Screens were placed over the drains to prevent any possible loss of valuable material. Each large plastic bag was opened separately and its contents washed in cold water. The men used their fingers and soft brushes to remove the soil in which the bones had lain for thirty-eight years. The bones were fragile. If there were any teeth in a plastic bag, they were cleansed with toothbrushes. When the men were finished with the remains from X-1, they placed them to dry on the stretcher that had been tagged X-1, and went on to unpack and wash the bones from X-2. The washing and drying took about two weeks. Stewart then laid out the remains on each of the eighteen stretchers so that the bones occupied their normal positions relative to the other bones of a human skeleton.

The CIL owns two complete skeletons—perfect specimens, of the sort bought from medical-supply firms to teach aspiring doctors and physical anthropologists anatomy. On a lab skeleton, all two hundred and six bones of the human body, which are originally ivory in color, have been bleached white, and the bones have been wired together. All twenty-six vertebrae and twelve pairs of ribs, all fifty-four wrist, hand, and finger bones, and all fifty-two ankle, foot, and toe bones are present and accounted for: the specimens had died of natural causes. Two facial bones (the maxillae) form the upper jaw and serve as the foundation for the sixteen upper teeth. A large horseshoe-shaped facial bone (the mandible) forms the lower jaw and supports the sixteen lower teeth. If any teeth are missing, the chances are they have fallen out. Most medical-supply firms in the United States acquire specimens in India, from poor communities whose residents cannot afford dentists.

The difference in appearance between the lab-specimen skeletons and the bones that Stewart had laid out on the eighteen stretchers was quite comparable to the difference between the B-24 when it took off from Port Moresby on March 22, 1944, for Nadzab, and the B-24 less than half an hour later, after it had crashed into the side of Mt. Thumb. When the CIL team saw the B-24 in April 1982 a few of its large parts were fairly intact and recognizable, but some parts had been damaged almost beyond recognition and others, most of the left wing, for example, were never found; they had probably been consumed in a fire that started after the crash.

The B-24 had flown into the mountainside at a speed of approximately 150 miles per hour. As a result of the impact, a large number of the bones had broken. In addition to the trauma originally suffered by the bones on March 22, 1944, even those that were intact after the crash had deteriorated during the thirty-eight years they spent in the wet soil of the tropical rain forest. (The intervening years had been kinder to the metal parts of the plane.) The small bones, such as the phalanges, metatarsals, and cuneiforms of the feet, are always among the first to disappear in such circumstances. Few were found. The hipbones, which consist of the ilium, the ischium, and the pubis—three separate bones that unite during adolescence—are usually called the innominates, because they bear no resemblance to any other object. The innominates are heavy and tend to endure. The twelve long bones of the upper and lower limbs—the right and left upper-arm bone (the humerus), the

right and left bone on the thumb side of the forearm (the radius), the right and left bone on the little-finger side of the forearm (the ulna), the right and left thighbone (the femur), the right and left shinbone (the tibia), and the right and left calf bone (the fibula)—are also quite durable. Long bones consist of a shaft and two ends; the ends are less dense and disintegrate before the more compact shafts. Many long bones were missing from these remains. Some had perhaps been washed away after the crash: the plane had come to rest on a steep hillside, and there was a stream below the hillside.

In the first half of June, when Tadao Furue looked at the remains on the eighteen stretchers, his immediate reaction was that there were indeed remarkably few bones, and that those present were in remarkably poor condition. With twenty-two individuals on the plane, there could have been 4532 bones if they had all been recovered. There were fewer than a thousand. Four of the stretchers—X-2; X-4; X-15, 16; and X-17—appeared quite crowded. Many were rather bare. There were fewer than twenty-five bones each on X-5 and on X-9. Leslie Stewart had put any jawbones and teeth that had been in the plastic bags at the tops of the stretchers. Teeth are by far the longest-lasting parts of the human body (dental enamel is one of the hardest substances found in the natural world) and are the most valuable in the identification of skeletal remains. If each of the twenty-two passengers had had thirty-two teeth and if all these had been recovered, there would have been seven hundred and four teeth on the stretchers; there were a hundred and eighty-one. Furue wished he had more bones to work with: it is much easier to identify an individual if you have two hundred and six bones or a hundred bones than if you have twenty. He also wished there were more teeth. He could see that the team had recovered no teeth for a number of the men who had been on the plane.

The remains on the stretchers had been found by the team in a small area of the crash site and were commingled—a frequent occurrence in plane crashes. The purpose of laying out the bones on each stretcher in proper anatomical order is to provide an early visual awareness of commingling. It was easy for Furue to see that there were the remains of at least three men on X-2,

because there were duplicates and triplicates of bones that an individual has only one of—for example, two right femora and three left femora. There wasn't just copious commingling on crowded stretchers, like X-2 and X-17; there was obvious commingling on fully half the stretchers, including some that were almost as sparsely populated as X-5 and X-9. There were only sixteen bone fragments (besides some skull portions) on X-19, yet these included portions of three right humeri and two right femora.

The first step taken by a physical anthropologist in identifying commingled remains is called segregation—the uncommingling of the remains. In remains from a crash like this, with such extensive commingling of bones in very poor condition, segregation is by far the most difficult and time-consuming part of the identification process. An adept student of physical anthropology may learn in a few days or weeks the difference between an intact right tibia and an intact left tibia and the difference between the sixth and the seventh thoracic vertebra on a specimen skeleton. It might have taken such a student years to ascertain whether some of the pale-brown weathered bone segments on the eighteen stretchers were part of thoracic or lumbar vertebrae—an ability that Furue had acquired during three decades spent identifying the victims of plane crashes and other disasters.

Tadao Furue (pronounced Fur-ROO-eh), a Japanese citizen who was fifty-seven years old in May 1982, had studied anthropology at the University of Tokyo, had received his Bachelor of Science degree in 1950, and had become an assistant in the Department of Anatomy of the Nara Medical College. In 1951, General Douglas MacArthur's headquarters had needed a physical anthropologist for five months to identify some Korean War casualties. Furue had asked for a leave of absence and had accepted the temporary job. It evolved into something more permanent: he has now been working for the United States Army for thirty-five years. From 1951 until 1977, he was a "contract" employee and lived in Japan. In the 1960s, difficult cases from Indo-China were sent to him. He was also assigned to Vietnam and to Thailand on a number of occasions, for periods

of up to three months, to identify remains from the Vietnam War. In 1977 he moved to Hawaii, with his wife and daughter, and went to work for the CIL as a Department of the Army civilian employee. Furue, who has had more experience in identifying military remains than any other physical anthropologist in the world, says that his work, and particularly segregation, has several requirements to which he lays claim: "nerves of steel," "great tenacity," and "a strong personality."

"If some of the other physical anthropologists I've worked with had seen the eighteen stretchers, they might have written a report to the effect that 'Due to the nature of the crash, individual identification is not possible, therefore it is recommended that the commingled remains receive a group burial,'" he says. "You can't look at shattered bones and either panic or mentally give up. You have to tell yourself that it may take weeks or months to piece fragments together and fit loose teeth into the proper sockets. It takes time to put a puzzle together. I think of my work as solving a high-dimensional jigsaw puzzle."

You also have to like hard cases, Furue adds. He thrives on them, which is just as well, because the CIL receives hard-to-identify remains not only from all branches of the military but also from civilian disasters. Two hundred and forty-one servicemen, most of them marines, were killed when a building that the marines were using as a barracks at Beirut International Airport was blown up by Middle Eastern terrorists on October 23, 1983. The remains of two of the men who couldn't be identified by identification specialists at the United States Army Mortuary in Frankfurt, Germany, the largest military mortuary in Europe, were hand-carried to the CIL in a small card-file box. Furue was able to identify them as two young lance corporals who had been assigned to the arms room at the time of the incident.

Tadao Furue is a perfectionist. He first reviewed Stewart's preliminary work, correcting some errors that had been made in laying out the remains. Right and left humeri and right and left femora had been reversed, and partial femora had been mistaken for partial tibiae and other bones. Stewart had put together with surgical tape only a few long bones that were broken into two pieces. Furue started piecing together many other long

bones, as well as vertebrae and the cranial and facial bones of the skull. It was indeed slow, tedious work. He began to commit to memory the bones on each stretcher and to decide which bones on each had once belonged to one individual. Furue is familiar with the procedures followed by the CIL's search-and-recovery teams in the field. He respects the fact that the bags containing bones (and often teeth and personal effects) represent an initial form of sorting. For this reason, the contents of each bag are kept separate while they are washed and laid out on the stretchers.

The greatest single aid in the preliminary stage of segregation, so readily visible on Stretcher X-2, is duplication—and, in this instance, triplication—of bones. After Furue had inspected the remains on X-2, he asked for two additional stretchers, which were tagged X-2A and X-2B. What made it unusually easy for him to see that most of the bones on X-2 belonged to three individuals was the disparity in the length of the limb bones: variation in bone length is a second significant factor in segregation. In Furue's informed opinion, one man had been of medium height. The bones that Furue believed to be his were pieced together and laid out on Stretcher X-2. A second man had been extremely tall. The bones that Furue believed to be his were laid out on X-2A. The third had been extremely short; his bones were put on X-2B. Age is a third critical element in segregation. Furue could tell that the man on X-2 had been in his late twenties and the men on X-2A and X-2B in their early twenties. If segregation consisted of merely examining the pieced-together bones on one stretcher and dividing them up on three stretchers, it would be only a moderately difficult, time-consuming, nerve-racking enterprise. Some of the bones found at the X-2 site didn't belong on either X-2 or X-2A or X-2B, however, and some of the bones that were originally on other stretchers (it eventually turned out) did.

The work of sorting out the femora that Furue found on X-2 gives an indication of what was involved in this one aspect of segregation. There were two right femora. He allocated one to the medium-tall man on X-2, the other to the very tall man on X-2A. There were three left femora. A very long one was put on Stretcher X-2A; it matched X-2A's right femur. Bilateral sym-

metry is another principle used in segregation. People's left and right arms and legs generally look alike because the bones in their left and right arms and legs do. (Exceptions to the rule include baseball players, and especially pitchers—something that Furue had learned when he was a university student and had the opportunity to examine and measure the arms of the members of a well-known Japanese baseball team.) Furue put a very short left femur on Stretcher X-2B, which at this stage had no right femur. Usually, an individual with short arm bones has short thighbones. The scale of the left humerus, radius, and ulna on X-2B accorded with the very short left femur, as did the scale of such other bones as the left and right clavicles (the collarbones) and the right scapula (the shoulder blade).

Furue realized that the third left femur originally on X-2 didn't belong to the medium-tall individual whose bones were now on X-2. It didn't resemble X-2's right femur, and it differed in appearance from the other bones. It seemed to belong to a man who had been shorter than the man on X-2, though not quite as short as the man on X-2B, and one whose build had been heavier than that of either of those two men, whose bones indicated that they had been of medium build. While Furue is segregating commingled remains, he evaluates each individual's build. Even the spongy inner-bone texture of this third left femur was different from the texture of the other bones on X-2. Bone texture is another aid in segregation. "Bones and teeth will surrender many facts about a person's physical attributes and his cultural patterns, so a good bone detective must make multi-dimensional observations," Furue says.

When Tadao Furue turned his attention to Stretcher X-10, he concluded that most of the bones on it belonged to two people. The one whose bones he left on X-10 had been a man who was quite short and of medium build; the one whose bones he shifted to Stretcher X-10A had been about the same height, but his bones showed he had been far heavier. There was a partial right femur and almost a whole right femur on Stretcher X-10. Furue left the partial femur there, because it corresponded to the other bones on X-10. He saw that the almost intact right femur was too short and too slender for either the individual on X-10 or the one on X-10A. After examining the remains on

every stretcher on the lab floor, he found its place: it matched the very short left femur on X-2B perfectly. That left the individual on X-10A without a right femur, but only temporarily: X-10A got a right femur from X-6.

Meanwhile, Furue had been segregating the bones on X-4 and X-17, which had been dug up by a CIL sergeant on separate days but at spots that were not much more than a yard apart. Furue determined that most of these bones belonged to three individuals—to two rather tall men of medium build (they were designated X-4 and X-4-17) and to one who had been quite short and of medium build, X-4-17A. There had been four left femora on X-4 and X-17. One went to X-4, one to X-4-17, one to X-4-17A, and one to X-6. There had been three right femora at X-4 and X-17. One went to X-4 and one to X-4-17. The third right femur didn't match the other bones on X-4-17A. It was the bone of a thinner man and went to X-6.

Thus far, X-4-17A lacked a right femur. It acquired one shortly. Furue had made up his mind that most of the bones on Stretcher X-14 belonged to two individuals—a thin man of medium height, who was designated X-14, and a very tall, thin man, designated X-14A. There were two left femora on X-14—one for X-14, the second for X-14A—and three right femora. One of these was for X-14, another for X-14A; the third wound up on Stretcher X-4-17A: it matched the left femur already there.

When Furue got to Stretcher X-19, he determined that most of the bones were those of two individuals, X-19 and X-19A. There was a partial femur and an almost complete femur on that stretcher. The partial femur, which he pieced together with a fragment of femur from Stretcher X-13, went to X-19A, a slight man of medium height. The almost complete right femur went to X-19, a rather short, heavily built man. The third left femur that had been on X-2 finally found its place—on X-19, where it matched the right femur in size and symmetry. Movement between Stretchers X-2 and X-19 proved to be a two-way proposition: both X-2 and X-2B got partial right humeri from X-19. There was some additional transferring of femora, but one bone that X-2 never did get from any other stretcher was a left femur.

Furue's identifications have so rarely been challenged by the

families of those whom he has identified, and so rarely submitted to other physical anthropologists for verification, that he feels he must be extremely severe with himself. "I have only one sister, who lives in Japan, but I imagine that in the lab with me I have a vicious twin brother, another Tadao, who questions everything I do," he says. "When I am segregating remains and I switch a bone from X-6 to X-10A, I can almost hear my twin brother asking, 'Are you sure that's reasonable?' I look at the rough crash-site sketch made by one of the sergeants in the field and redraw it to scale and verify where each X number was recovered. X-6 and X-10 were 14 feet apart. Perfectly reasonable. I also study the photographs taken by another sergeant in the field. I may ask him whether a certain bone was found above or below the surface, or in exactly which position. Before I move a bone from one stretcher to another, I mark it with the number of the stretcher on which it started out, so I won't lose track of it, and if I move, say, a left femur, I make sure that it doesn't fit on any of the other stretchers—even those that already have left femora that seem to belong where they are. I try to create my own system of checks and balances."

Had Furue decided only that there were three individuals on X-2, three on X-4 and X-17, two on X-10, two on X-14, and two on X-19, thereby adding six stretchers to the original eighteen on the lab floor, he might have had twenty-four stretchers, but as he was adding six X numbers he subtracted two. There were about twenty bones or partial bones (plus some partial jawbones and a few teeth) on Stretcher X-5. These bones included a right humerus, a right radius, a right ulna, and a left humerus. There was approximately the same number of bones (and some additional jawbone fragments and teeth) on Stretcher X-8, including a left ulna and a left radius. There were some tiny bone pieces on Stretcher X-18—the largest was a portion of an innominate measuring approximately 2 inches by 4—and still more jawbone fragments and two teeth. To Furue, the remains on the three stretchers appeared startlingly alike; he was convinced that they all belonged to one man, whom he designated X-5.

The skeleton is the body's internal framework. Its primary function is that of support. Just as beams hold up buildings, the skeleton holds the human body erect. Unlike buildings, however, the body doesn't stay still. Where bones meet bones, joints—"articulations," in the language of physical anthropology—make the skeleton flexible and give it movement. Most bones articulate with other bones in one or more places. At its proximal (or upper) end, the humerus articulates with the scapula. At its distal (or lower) end, it articulates with the radius and the ulna; this articulation is the elbow joint. The radius and the ulna articulate with each other at both their ends. X-5's right humerus and right ulna articulated: they fitted together perfectly. When bones do not articulate, it is obvious; trying to force them to do so is as futile as trying to open a door with a key that doesn't fit the lock. Articulation is a cardinal principle of segregation—one that Furue used as often as possible while he was uncommingling the bones on all the stretchers on the lab floor. Furue would have been able to articulate more bones if so many of those that were present had not lacked ends. In the case of X-5, he couldn't articulate the three long bones of the leg—these meet up in much the same fashion as the arm bones—because X-5 had only a fraction of a left femur and a partial right fibula.

Tadao Furue spent a week piecing together X-5's left and right innominates, major portions of X-5's skull, and its axis—as the second cervical vertebra is known. In 1982, Furue was the only full-time physical anthropologist employed by the United States Army to do identification. The Army didn't have an odontologist, a specialist in the science of teeth, assigned to work full time on identification. Furue had made himself proficient in odontology and took pride in his ability to segregate commingled teeth and to fit into their proper sockets teeth that have been found loose. By the time he finished with X-5, he had not only pieced together portions of the maxillae and a number of upper teeth from X-5 and X-8, and portions of the mandible and lower teeth from X-8 and X-18, but had also taken loose teeth from Stretcher X-1 (the remains numbered X-1, X-5, X-8, and X-18 had been recovered by different sergeants on different days in close proximity) and put them in their proper places—one in X-5's right maxilla, the other in X-5's left maxilla. Furue spent more time on X-5 than on any other remains, and recalls this work with special satisfaction. As a high-school student, Furue had planned to be an engineer, but after seeing

Modern Times, Charlie Chaplin's satirical movie about the dehumanizing effects of technology, he decided he wanted to work in a profession that was less mechanical. A remains like X-5 always makes him glad he chose to become a physical anthropologist. "I'm bewitched by the beauty of bones," he often says. "They're not mass-produced cast material. Each set of bones has its own individuality, and so does each set of teeth. Even after a man has lost his life and has lain on a far-off island with others for thirty-eight years, his bones and teeth are often unique, so I may be able to make a human contribution. I may be able to keep him from being forever unknown."

In June, when Furue first saw the remains from the B-24 laid out on the eighteen stretchers at the CIL, he had believed that it would take him three months to identify the remains, if there were no interruptions. There were interruptions, and segregation proved even more difficult than he had originally assumed. When he finished segregating the remains, not a single stretcher on the lab floor had the same bones it had started out with. Originally, Furue had believed that Stretcher X-1 held the remains of only one individual, and had believed the same of Stretcher X-7, but even these stretchers had eventually had skeletal fragments removed: X-1 had provided X-5 with part of the right innominate and with two teeth, and X-3 had supplied X-7 with a right ulna and X-9 with a piece of the left scapula. Even some of the smallest bones had been moved—X-14 contributed a fragment of the right innominate and of the first lumbar vertebra to X-13.

After segregation, there were twenty-two stretchers on the lab floor. Furue had known since the team's return that there were twenty-two men on the manifest of the B-24: the CIL is a small organization and such news travels fast. About forty years earlier, he had read Arthur Conan Doyle and had been impressed by his fictional detective Sherlock Holmes, because Holmes was properly wary of easy assumptions. Twenty years earlier, he had learned that manifests were fallible. While he was working in Japan, he had identified the remains from a Second World War plane crash that was recovered during the mid-1960s. There had been twenty-three men on the plane's manifest. When Furue segregated the remains, he discovered that there had been twenty-four men aboard. The twenty-fourth man had been a hitchhiker and was subsequently identified. Furue hadn't found a single bone on any of the original eighteen stretchers from the B-24 which suggested the presence of an unmanifested passenger.

The twenty-two stretchers were numbered X-1, X-2, X-2A, X-2B, X-3, X-4, X-4-17, X-4-17A, X-5, X-6, X-7, X-9, X-10, X-10A, X-11, X-12, X-13, X-14, X-14A, X-15, 16 (Furue had found some commingling on that stretcher, but most of the bones belonged to one individual, not two, and three bones that didn't were now on X-12), X-19, and X-19A. Many stretchers held fewer bones than they had in June. The stretcher that was the most strikingly bare was X-19A. There were six bones on X-19A—a partial left tibia, a partial left ulna, a small section of the left femur, a portion of the right femur, a major portion of the right innominate, and a modest section of the left innominate. There wasn't a tooth on X-19A.

The CIL's hours are from 7:00 A.M. to 3:30 P.M. Monday through Friday. Furue often stays on alone until the late afternoon, goes home for dinner, and returns to the lab to work into the night. He often works weekends. "X-19A was the hardest case to sell to my evil twin brother," he recalled afterward. "My first impression of the remains, in June, was that there were at least twenty individuals on the stretchers. After several months, I gradually became sure that there were twenty-one. If there had been, I would have finished much sooner. I spent three days in late November checking to see if the six bones on X-19A could possibly belong on one or more of the other stretchers. They couldn't. X-19A's partial right femur and right innominate were morphologically inseparable. No other femur could conceivably match that innominate. Nor could the combination of that femur and innominate fit into the remains on any of the twenty-one other stretchers. The right partial innominates on seventeen stretchers duplicated the sizable part of the right innominate on X-19A. Four other stretchers completely lacked right innominates, but all four had right femora that duplicated X-19A's partial right femur. On the evening of the third day, as I paced the deserted floor of the lab, I said to myself, 'If I've segregated the remains brought back from Mt. Thumb per-

fectly, if I've reduced the commingling to zero, each stretcher should now have on it all that the team recovered of what were once twenty-two human beings.'"

Furue's next concern was to determine from the remains on the twenty-two stretchers precisely what those human beings' physical characteristics had been on March 22, 1944, just before the B-24 crashed into Mt. Thumb.

There are five primary characteristics that an experienced physical anthropologist can read from unknown skeletal remains. Some bones (particularly those that form the pelvis) disclose sex. The skull and teeth reveal whether an individual is a Caucasoid, a Negroid, or a Mongoloid (the three major races). In March 1977 the Vietnamese had turned over what they said were the remains of twelve American pilots to a special commission of prominent American citizens. According to the Vietnamese, these pilots had been shot down over the North between 1965 and 1968, had died in captivity, and had been buried in several cemeteries around Hanoi, one of which was named Van Diem. Furue determined that one of the twelve was a Southeast Asian Mongoloid man who had been at least fifty years old. The special commission had been told that among the people buried in Van Diem were two hundred and fifty civilians killed in American bombing raids on Hanoi. The Mongoloid remains were presumably those of a Vietnamese civilian.

In early June, Furue had checked to make sure that the remains on the twenty-two stretchers at the CIL were all those of white males; they were. The three other primary characteristics that Furue could ascertain from the bones, which he had used to a significant extent in segregating the remains, would be essential in differentiating them. One was age. The bones of the human body are not fully formed in childhood. In children, most bones—including the long bones—consist of a diaphysis (or shaft) and two epiphyses (end portions), which are separated by a thin layer of cartilage known as the epiphyseal plate. It is this arrangement that enables bones to increase in length. As growth occurs, the cartilage disappears and the diaphysis and the epiphyses unite into one bone; eventually, all that is left of the epiphyseal plate is a vestigial line. Studies have shown that "epiphyseal union" takes place in the long bones of young men in an orderly sequence between the ages of about seventeen and twenty-five. Even when individual rates of growth are taken into account, a physical anthropologist can determine the age of young men with a high degree of precision. Furue can recognize the stages of epiphyseal union—from none, through one-quarter, one-half, or three-quarters united or fused, to completely united or fused—and he is often able to judge how long before death unions occurred by assessing the vestigial lines.

Furue is relieved when an unknown remains has a clavicle, because clavicular epiphyses fuse later than those of the long bones and are useful in determining the age of remains up to the age of thirty. Like all physical anthropologists, he is especially relieved when he sees an innominate, the bone that has been found to be the most accurate indicator of estimated age—one that may be useful up to the age of fifty. The left and right innominates meet in front to form the pubic symphysis, which undergoes a regular metamorphosis and is one of the most useful areas for determining the age of an adult even past the age of fifty.

In life, the younger a person is, the easier it is to assess his age correctly. One may misjudge a baby's age, but not by more than a couple of months. One may overestimate or underestimate the age of a sixteen-year-old, but usually not by more than a couple of years. A person who is forty-five may look fifty or fifty-five, whereas another forty-five-year-old may appear to be thirty-five or forty. In death, too, as a general rule, the younger an individual is, the more accurately Furue can assess his age from his skeletal remains. After Furue studied the bones on Stretchers X-2A and X-4, he estimated the ages of both individuals as between twenty and twenty-two, which is to say that he believed they were at least twenty years old but had not yet reached their twenty-third birthdays. After studying the bones on X-2 and X-3, Furue estimated the ages of both those individuals as between twenty-five and thirty. He could occasionally be fairly precise in estimating the ages of older individuals, especially if a large number of bones was present. "The more bones the better," Furue says. "I need quantity as well as quality. If I have a lot of bones, I can see whether the aging criteria are consistent."

Furue was able to estimate X-12's age as between thirty and thirty-five, because there were many bones on Stretcher X-12, including both clavicles, and it was one of just three remains on the twenty-two stretchers that had well-preserved pubic symphyses. Furue could estimate X-10A's age only as between twenty-five and thirty-five. There were just ten partial bones on X-10A, no pubic symphysis, and no scapula (another bone that Furue finds useful for assessing age in the mid- and late twenties), and the partial right clavicle on X-10A, in Furue's words, "lacked usable areas for estimating age." He recorded the age of each of the twenty-two remains on a "working form"—a copy of Department of Defense Form 892 (a "Record of Identification Processing").

The second characteristic Tadao Furue recorded on a working form 892 was the height of each remains. Anatomists have been measuring bones for centuries—in 1755, an anatomy professor at the Louvre published some measurements he had made for the purpose of providing artists with a means of rendering the human body in correct proportions—and generations of artists and anatomists have known that there is a correlation between an individual's stature and the length of his long bones. It wasn't until the late nineteenth century that physical anthropologists in Europe attempted to estimate stature from the long bones, and it wasn't until the middle of the twentieth century that an American physical anthropologist—Dr. Mildred Trotter—was presented with a sufficient number of subjects to enable her to devise reliable algebraic formulas that could be used to estimate the living height of an unknown from his bones.

In 1948 Dr. Trotter, a professor of anatomy at Washington University in St. Louis, was assigned to Honolulu, where Second World War remains from the Pacific theater which had been temporarily buried overseas were being brought back by the Army Graves Registration Service for preparation for final burial. Dr. Trotter measured the bones of hundreds of these servicemen, who had been measured upon their induction into military service, and whose identities had never been in question. The vast majority of the men were white; the rest were black. From her research, Dr. Trotter concluded that the relationship of stature to long-limb bones differs sufficiently among men of different races to require different formulas, and also that the lengths of the lower-limb bones are more highly correlated with stature than are the lengths of the upper-limb bones; therefore arm bones should not be used in the estimation of stature unless no leg bones are available.

The formulas derived from the measurements that Dr. Trotter made in 1948 and 1949 were published in 1952. The table below, for white males, is given in centimeters and is arranged in order of increasing standard error of estimate.

1.30 (Femur + Tibia) + 63.29	± 2.99
2.38 Femur + 61.41	± 3.27
2.68 Fibula + 71.78	± 3.29
2.52 Tibia + 78.62	± 3.37
3.08 Humerus + 70.45	± 4.05
3.70 Ulna + 74.05	± 4.32
3.78 Radius + 79.01	± 4.32

X-1 had a femur that measured 46 centimeters and a tibia that measured 36.5 centimeters. Using the Trotter formula, Furue added these two numbers (which came to 82.5 cm), multiplied 82.5 cm by 1.30 (which came to 107.25 cm), added 63.29 cm, and got X-1's height: 170.54 cm. According to the Trotter formula, X-1's height should have been no more than 2.99 cm greater or less than 170.54 cm. There are 2.54 centimeters per inch, so Furue divided 170.54 by 2.54 and got X-1's height in inches: 67.1. The margin for error was 2.99 cm, or 1.17 inches. Because X-5 had only fragments of the lower limbs, Furue had to use a humerus. It measured 35 cm. He multiplied 35 cm by 3.08 and added 70.45 cm, divided by 2.54, and got X-5's height in inches—70.2. The margin for error was 4.05 cm—1.59 inches. He was able to use a femur plus tibia to estimate the height of six sets of remains and a femur to estimate the height of eleven others. He had to make do with a fibula once, a tibia once, and a humerus twice. In only one instance did he have to resort to a radius, where the margin for error is 4.32 cm, or 1.70 inches.

Before Furue was able to employ any of the Trotter formulas, he had to measure the available long bones. Measuring a bone is somewhat trickier than measuring a desk. Bones cannot be measured with rulers. On the other hand, once one has mastered the art of positioning and rotating bones on a device called an osteometric board to obtain their maximum lengths, measuring bones is a great deal easier than estimating the lengths of complete bones from partial bones. During segregation, Furue had been able to measure only four long bones—X-2A's right femur and X-4-17's left femur, tibia, and radius. (He obtained X-4-17's height by using his left femur and tibia; he also measured X-4-17's radius and figured out his height from the radius, but only as one of his numerous self-imposed checks and balances.) He had to estimate the lengths of fifty-six bones before he could estimate the heights of the twenty other remains. There are formulas for calculating the length of long bones from partial bones, but Furue doesn't use them, because he has found them unreliable. Instead, he studies the surface contour of each partial bone. He is familiar with the precise location of all its "landmarks"—its projections and ridges and the openings through which it receives nutrients—and with the distinctive way in which each long bone tapers. He then compares a partial bone with a similar complete specimen bone in the CIL's collection. He says he is usually able to estimate the length of a bone if he has at least one-third of it.

There are no formulas to help Furue assess muscularity, the third, and last major characteristic to be recorded on the working forms, from the remains on the stretchers. He simply holds a bone in one hand, looks at the ridges (to which the individual's muscles were once attached), does the same with many of the other bones on that stretcher, and decides whether they belonged to a man who was of slight muscularity/slender build; of average muscularity/medium build; or of well-developed muscularity/heavy build. He sometimes subdivides builds; for example, a set of bones may strike him as being of subaverage muscularity/medium build. He has been asked if dieting changes the appearance of bones, and has answered that it doesn't. "Prolonged starvation in a prison camp might change the bony substrata, but in estimating muscularity I've never been fooled by weight changes in my years of handling military remains," he says.

All methods of identification use the basic process of comparison. The identification of human skeletal remains requires the matching of physical characteristics derived from the remains with physical characteristics that are a matter of record. Before the search-and-recovery team left for Papua New Guinea in April, the CIL had obtained the Missing Air Crew Report for 42-41081 and also the missing-in-action files of its crew of three and its nineteen passengers. The files held a fair amount of information about each serviceman. Every file had the man's rank, serial number, date of birth, height, and weight, and the name and address of at least one of his next of kin. While Furue was recording the estimated age, height, and muscularity for the twenty-two remains, Leslie Stewart was examining the men's antemortem records. It was much simpler to put the physical characteristics from the records on paper in such a way as to enable Furue to compare the records of the twenty-two men easily with the readings from the remains than it had been to elicit the information from the remains. Stewart looked up each man's date of birth and figured out the man's age on March 22, 1944. He wrote down each man's height and weight. Furue verified Stewart's figures. Three of the men had been measured and weighed more than once. Furue used the greater height and the highest weight when he calculated each man's body-build index, because they were the most recent and, with a few exceptions, he had learned that the latest figures on a record were the most accurate. These numbers would be compared to Furue's readings of muscularity from the remains. To obtain each man's body-build index, he employed a mathematical formula that had been devised by a German physical anthropologist named Fritz Rohrer in 1921. The formula—weight in grams divided by height in centimeters cubed, and the quotient multiplied by a hundred ($g/cm^3 \times 100$)—yielded twenty-two body-build indices, which ranged from 1.00 to 1.67: the lower the number, the more slightly built the man. Figures between 1.00 and 1.15 indicated slender men, figures from 1.15 up to about 1.40 men of medium build, and figures over 1.40 those of heavy build.

The most recent record of one of the three tallest men on the plane showed that his height was 72 inches; his last recorded weight was 180 pounds.

180 lbs. = 81.6 kg, or 81,600 g
100 × 81,600 = 8,160,000
72 in. = 182.88 cm
182.88^3 = 6,116,438.863
8,160,000 divided by 6,116,438.863 = 1.33

So 1.33 was the man's Rohrer body-build index. Furue and his calculator are seldom parted.

Furue filled out a few pages of legal-size paper with a combination of information from the records and body-build indices. (He had used two other indices besides Rohrer's, as a check and balance.) He arranged the information from the records in order of the men's heights, because he regarded height as the most significant single physical characteristic in these identifications. There were three men in the very tall group, ten in the medium-tall group, eight in the medium-short group, and one very short man. The table opposite is an abridged version of the relevant data that Furue wrote down.

Furue arranged the working forms in the numerical order of the twenty-two stretchers, from X-1 to X-19A. Then he compared the physical characteristics of the remains to the data from the records, starting with X-1.

According to Furue's reading of the remains, the man on X-1 had been 67.1 inches tall, he had been of medium build, and he had been between twenty-three and twenty-six years old on the day of the crash. In a crowded room, a person might not notice the difference in height between a man who is 5 feet 7 inches and one who is 5 feet 9 inches. A 2-inch difference in height appears much greater on the bones, and therefore a less conscientious physical anthropologist might not have bothered to compare the man on X-1 with the three men in the very tall category, or even with the ten men in the medium-tall category. Furue, however, compared the man on X-1 with the record of each of the twenty-two men whose names had been on the man-

NAME	HEIGHT IN INCHES	WEIGHT IN POUNDS	ROHRER BODY-BUILD INDEX	AGE (years, months, days)
Allred, Robert E.	72	180	1.33	28-4-25
Holm, Keith T.	72	142	1.05	23-6-28
Shrake, William M.	72	135	1.00	20-7-29
Frazier, Weldon W.	71	156	1.21	25-2-27
Kachorek, Joseph E., Jr.	70½	212	1.67	32-8-16
Young, Emory C.	70½	159	1.26	21-0-28
Atkins, Harold	70	170	1.37	23-0-27
Carpenter, Thomas J., Jr.	70	152	1.23	22-8-5
Samples, Charles, Jr.	70	141	1.14	24-5-28
Loop, Carlin E.	69½	161	1.33	26-3-5
Landrum, Harvey E.	69½	140	1.15	24-8-23
Thompson, Robert C.	69½	130	1.07	22-7-16
Walker, Melvin F.	69	145	1.22	28-0-25
Steiner, Charles R.	68	162	1.43	26-5-18
Ginter, Frank	67½	155	1.40	27-3-2
Staseowski, John J.	67	173	1.59	29-7-11
Barnard, Charles R.	67	148	1.36	23-10-0
Butler, Clint P.	67	120	1.10	20-8-22
Gross, Stanley G.	66½	141	1.33	26-1-18
Lawrence, Stanley C.	66¼	139	1.32	25-1-12
Mettam, Joseph B.	66	168	1.62	24-3-24
Geis, Raymond J., Jr.	64	139	1.47	21-0-0

ifest of 41081, starting with Allred. "The more I do, the less chance there is of error creeping in," he says. "Who knows when an extra look at remains will help me to detect a mistake I may have made in segregation?" Robert E. Allred was not only much too tall to be X-1 but also too old. Keith T. Holm was too tall and too slight of build. William M. Shrake was too tall and too slight (Furue had never seen a lower Rohrer index than Shrake's) and too young.

In the medium-tall category, Weldon W. Frazier was too tall and Joseph E. Kachorek, Jr., was too tall, too heavy, and much too old to be the man on X-1. When Furue compared the readings of the remains on twenty-one of the stretchers on the lab floor with Kachorek's record, Kachorek was easy to rule out. At 212 pounds and thirty-two years eight months and sixteen days, he was more heavily built than anyone else on the plane and more than three years older than the next-oldest man. Kachorek's Rohrer index was the highest that Furue had ever come across. Emory C. Young was too tall and too young to be the man on X-1; Harold Atkins was too tall; Thomas J. Carpenter, Jr., was too tall and a little on the young side; Charles Samples, Jr., was too tall and too slightly built; Carlin E. Loop was too tall and a little on the old side. Harvey E. Landrum was too tall and too slender, and so was Robert C. Thompson (who was also a bit young). Melvin F. Walker was too tall and too old.

When Furue turned to the medium-short group, he had to consider body-build index and age more closely. X-1 was about halfway between the tallest man in the group (who was 68 inches) and the shortest (who was 66 inches), so none of the eight could be ruled out on the basis of height. Charles R. Steiner was a little too heavily built and too old, Frank Ginter was too old, and John J. Staseowski was far too heavily built and too old. Charles R. Barnard was of medium build, as was the man on X-1, and at twenty-three years and ten months he fell within X-1's age bracket. Furue thought that the man on X-1 might be Barnard, but he went on to compare the man on X-1 with the records of the four other men in the medium-short group. Clint P. Butler was too slight and too thin. Furue considered Stanley G. Gross a bit too slender to be the man on X-1, but still a candidate. Stanley C. Lawrence's build was also a bit

slighter than medium, but his age was within X-1's age bracket; he, too, might be the man on X-1. Joseph B. Mettam was far too heavily built to be the man on X-1.

Raymond J. Geis, Jr., was about 2 inches shorter than anyone else on the plane. It was easy to rule him out against X-1—and against twenty of the twenty-one other unidentified remains. He was also one of the three youngest men on the plane. Furue sometimes describes himself as "a cold-blooded scientist." It is an inaccurate description. When he wrote down Geis's age, he had thought how sad it was for a man to die on his twenty-first birthday. Although twenty is the age when one officially becomes an adult in Japan, Furue remembered how happy he had been when he celebrated not only his twentieth birthday but also his twenty-first.

While Tadao Furue was still recording the estimated ages, heights, and builds of the twenty-two remains, Leslie Stewart was charting the teeth on the stretchers. Going over Stewart's work, Furue noticed that four stretchers had at least sixteen teeth on them and that nine had between one and fifteen. Nine stretchers had no teeth, although two had small jaw fragments. Stewart also charted the dental records of the men on 41081. When Furue reviewed them, he saw that the files of two passengers contained no dental records. Forms in the files of eleven other men showed only what teeth they had had extracted. When Furue had previously compared the dental remains of Second World War soldiers with their dental records, he had learned that men with extraction-only records did not have otherwise perfect teeth. He had learned that two of the forms put in missing-in-action files in the 1940s did not lend themselves to thorough dental charting: the people who filled out these forms could easily record extractions, but there was little room on either form for them to record other dental work that might have been done. The records of only nine of the men on the plane contained dental charts from their years in the armed services which showed fillings, crowns, or other forms of dental restoration or treatment as well as extractions.

Despite the abundance of information visible on bones which enables a Tadao Furue to make reliable determinations of sex,

race, age, height, and muscularity, the information is often not specific enough to lead to a precise identification. According to the bones, the man on X-1 could be Charles Barnard, Stanley Gross, or Stanley Lawrence. Personal identification from skeletal remains is more likely to be accomplished by a study of dentition. The effectiveness of dental identification is naturally related to the recovery of dental remains, which had been limited on Mt. Thumb, and to the caliber of the dental records, which had been dismal for the men on 41081.

Furue does not permit himself to be discouraged easily by things in life he cannot change. He goes on with his work. His next task was to compare the dental charts from the remains with the dental charts from the records. In dentistry, each tooth is assigned a number to simplify its designation. Under the current system used by the armed services, the upper teeth are, from right to left, No. 1 to No. 16. No. 1 is the right third molar (or wisdom tooth), No. 2 is the right second molar, No. 3 is the right first molar, No. 4 and No. 5 are the second and first right bicuspids, No. 6 is the right bicuspid, No. 7 is the right lateral incisor, No. 8 and No. 9 are the central incisors (the upper "two front teeth"), and so on over to No. 16, the left third molar (or wisdom tooth). The lower teeth are No. 17 to No. 32, this time going from left to right. No. 17 is the left third molar (another wisdom tooth), No. 18 is the left second molar, No. 24 and No. 25 are the bottom "two front teeth," and No. 32 is the right third molar (the fourth wisdom tooth). The most commonly extracted teeth are the four wisdom teeth—No. 1, No. 16, No. 17, and No. 32. Furue has learned that they were the most unreliably charted during the Second World War. Wisdom teeth usually erupt between the ages of seventeen and twenty-one, but may erupt as late as the age of twenty-five—or, if they are impacted, not at all. Military dentists often marked a young man's wisdom teeth extracted when in fact they had not yet erupted. The teeth of servicemen were rarely X-rayed in the early forties, so the mistake was an easy one to make.

The teeth from the records and those from the remains had been charted on a Department of Defense Form 897—a "Physical and Dental Comparison Chart." The greater part of the form is taken up with thirty-two lines for charting the teeth. Its left half is

for the dental information elicited from the remains, its right half for the dental information from the records. When Furue began his attempt to systematically associate the twenty-two names of the men on 41081's manifest with the remains on the twenty-two stretchers, he had established a "command post"—a table covered by a white sheet, at one side of the lab floor. From his chair at the command post he could see the rows of stretchers. He had filled out a Form 897 for each of the twenty-two men with the man's name on it and only the right side of the form filled in. He now laid the forms out on the table in two rows of eleven. The forms were arranged in order of the men's height. To hold the forms down and let him read them at a glance, he covered each row with a piece of Plexiglas. Furue had made up another set of 897s in the numerical order of the stretchers, from X-1 to X-19A. Only the left side of these forms was filled in. He proceeded to compare the 897s from the remains with the 897s from the men's records, starting with X-1. (See page 68.)

If Furue writes nothing next to a tooth, that signifies that no dental work has been performed on it; such teeth are known as "virgins." Of the teeth on Stretcher X-1, Teeth No. 6, No. 7, No. 8, No. 9, No. 10, No. 12, No. 15, and No. 16 were virgins; six of them had been found in the maxillae, two had been found loose. The symbol PX next to a tooth indicates that the tooth is "posthumously missing"; the tooth had been in place up to the time of the crash, but had come loose upon or after impact and had not been recovered by the search-and-recovery team. Anatomically, a tooth consists of two main parts—the root or roots, which are mostly embedded in the bony structure of the jaw, and the crown, which is mostly above the surface. It was easy for Furue to tell that Teeth No. 11 and No. 17 on X-1 were posthumously missing, because there were large empty sockets where they had been. If X-1's maxillae had shown that a tooth or teeth had been extracted, Furue would have written an *X* over the relevant number or numbers. Not only is it easy for him to distinguish between a tooth that is posthumously missing and one that has been extracted but he can judge whether the extraction is recent or old. If the extraction is recent, the bone has begun to repair itself and to fill in the socket; if the extraction is old, the bone has finished its job, and the spot on the maxilla or the mandible

This was X-1's form 897:

1	
2	
3	Section of maxilla
4	not recovered
5	
6	
7	
8	
9	
10	
11	PX
12	
13	O-AM
14	OL-AM, O-AM
15	found loose
16	
17	PX
18	
19	
20	
21	
22	
23	
24	Major portion of mandible
25	and teeth Nos. 18-32 missing
26	
27	
28	
29	
30	
31	
32	

where the tooth had once been is smooth. He can also see whether teeth have been extracted or have decayed and fallen out; dentists leave telltale signs when they pull teeth. Sometimes, when only a mandible and the lower teeth are recovered they may give Furue information about the upper teeth. If he sees that No. 19 is at a higher elevation than No. 18 and No. 20 and shows less wear than its neighbors, he will suspect that No. 14, the tooth that No. 19 should touch on the left maxilla, has been missing for some time before death, because teeth tend to rise when their opposite numbers are not there for them to meet up with.

Furue, in his role as odontologist, charts the type of substance used to fill teeth and the surface or surfaces of the teeth which have been filled. The substances used to fill teeth in the 1940s included "AM" (dental shorthand for "amalgam," an alloy composed primarily of silver and tin mixed with mercury, used predominantly on posterior teeth) and "SIL" (for silicate, a cement used on anterior teeth because it is similar in shade to the teeth). A tooth has five surfaces, which have been named to indicate the direction each surface faces. The mesial surface (M) is the surface of a tooth nearest the midline of the dental arch. The distal surface (D) is the surface farthest away from the middle of the arch. The lingual surface (L) faces toward the tongue. The facial surface (F) of a posterior tooth faces toward the cheek, of an anterior tooth toward the lips. The occlusal surface (O), the chewing surface of posterior teeth, meets and touches teeth of the opposite jaw. Occlusal amalgam fillings are the most common. The man on X-1 had one such filling on tooth No. 13 and another on No. 14. On No. 14, X-1 also had an amalgam filling that went into two surfaces, the lingual and the occlusal. Furue has worked on numerous dental remains with fillings on all five surfaces of a single tooth and has on rare occasions seen a tooth with eight fillings. He is able to determine whether a filling is recent or old by the amount of grinding, or attrition, it shows.

Although Furue had ruled out the probability that the man on X-1 was any of the members of the very tall group or of the medium-tall group, any of five of the men in the medium-short group, or the very short Geis, because of either one, two, or three physical discrepancies, he didn't compare X-1's dental re-

mains only with the dental records under the Plexiglas on his command post for Charles Barnard, Stanley Gross, and Stanley Lawrence, the three likely candidates to be the man on X-1. The bones of the skull are morphologically related to the other bones of the body, and an individual's teeth age consistently with his bones—facts that Furue had taken into account during segregation. Only four stretchers had an atlas, as the first cervical vertebra is known, and only one of these four also had an occipital bone, the bone that forms the back and base of the skull and articulates with the atlas. Furue acknowledged the possibility that he might have mistakenly put the wrong jawbones and teeth on a stretcher. He compared X-1's Form 897 with all the 897s on the command post; this was yet another check and balance.

Once again, he began with Robert Allred, whose dental record was complete and contradicted X-1's in many ways. Allred had one filling on No. 6, No. 8, and No. 9, and two fillings on No. 10, No. 12, and No. 15; these six teeth were virgins in the man on X-1. Allred had one filling, an O-AM, in No. 14, whereas the man on X-1 had two, an OL-AM and an O-AM. Allred's record also showed that he had had six teeth extracted—all four wisdom teeth and No. 7 and No. 13. Furue did not place much value on the discrepancy between Allred's No. 14 and X-1's No. 14: it was conceivable that the man on X-1 had had an OL-AM filling after Allred's last dental examination. Allred's teeth No. 6, No. 7, No. 8, No. 9, No. 10, No. 12, No. 13, and No. 15 could not, however, have been X-1's. Teeth that have been filled can never again be virgins, and teeth that have been extracted do not reappear. Furue's experience had taught him that except in the case of wisdom teeth dentists were quite accurate in recording extractions unless a tooth—say, No. 19—had decayed and been pulled, No. 18 had drifted into the position of the lost tooth, and a dentist had subsequently marked No. 18 as having been extracted instead of No. 19.

Keith Holm's dental record showed only one thing—that he was missing No. 16; X-1 had this tooth, but it was an unreliable wisdom tooth. Holm, who had been ruled out physically, couldn't be ruled out dentally. William Shrake's dental record, another of the complete ones, was not X-1's. The major discrepancy was that Shrake had a filling on No. 15 and the man on X-1

did not. According to Weldon Frazier's dental record, he was missing all four wisdom teeth. Because the dentist had recorded the dates on which he pulled Frazier's No. 17 (June 8, 1943) and No. 32 (June 16, 1943), Furue regarded these extractions as reliable. Frazier, therefore, was not the man on X-1, whose No. 17 was posthumously missing. Joseph Kachorek's dental record was distinguished by ten extractions, including No. 8, No. 13, and No. 14, teeth that were present in X-1. (Kachorek, it occurred to Furue, was unique dentally as well as physically.) Emory Young's dental record showed him not to be X-1; the principal discrepancy was that Young had a virgin on No. 14 and the man on X-1 didn't. Harold Atkins and Thomas Carpenter were the two passengers on the plane who lacked dental records. Charles Samples had a DO-AM filling on No. 13. The distal surface hadn't been filled on X-1's No. 13, and signs of fillings on tooth surfaces cannot disappear. In addition, Samples' record showed the date that his No. 16 was pulled (January 4, 1944) and the date his No. 17 was pulled (November 24, 1942). The dental records of Carlin Loop and Harvey Landrum revealed only that each of these men had had two wisdom teeth extracted, and didn't lend themselves to comparison with X-1. Robert Thompson's record also showed only two teeth extracted: No. 18, which couldn't be compared with X-1's unrecovered No. 18; and No. 16, a wisdom tooth, on which Furue placed little value. (There were no dates on the extraction-only records of Holm, Loop, Landrum, and Thompson.) Melvin Walker had two fillings on No. 15, the man on X-1 had none; Walker was not the man on X-1. Charles Steiner's record showed only two extractions, but one was No. 14, present in the man on X-1. Like Kachorek, Frank Ginter had had ten teeth extracted, including No. 14, so he could not be X-1. (The first molars—No. 3, No. 14, No. 19, and No. 30—come in when one is six, and get six more years of wear, and, often, of childish neglect, than the second molars, which come in when one is twelve; after the wisdom teeth, the first molars are the teeth most frequently extracted.) John Staseowski's record was another of the undated-extraction-only variety; his Tooth No. 16 (an unreliable wisdom tooth) had been pulled. There were six other extractions, and they were of teeth that hadn't been recovered for X-1, but Staseowski was

approaching thirty when he was killed, and the teeth on X-1 were those of a younger man. The next dental chart on Furue's table was Charles Barnard's.

This is what Furue saw when he placed the first seventeen lines of X-1's 897 next to the first seventeen lines of Charles Barnard's record.

	X-1's FORM 897 FOR 1-17		CHARLES BARNARD'S FORM 897 FOR 1-17	
1			1	O-AM
2			2	O-AM
3		not recovered	3	O-AM, L-AM
4			4	
5			5	
6			6	
7			7	
8			8	
9			9	
10			10	
11	PX		11	
12			12	
13	O-AM		13	O-AM
14	OL-AM, O-AM		14	OL-AM, O-AM
15	found loose		15	
16	found loose		~~16~~	
17	PX		17	O-AM

Of the twelve teeth on X-1 that could be compared with Barnard's record, nine agreed perfectly. No. 6, No. 7, No. 8, No. 9, No. 10, No. 12, and No. 15 were virgins on X-1 and on Barnard's record. No. 11 and No. 17 were posthumously missing on X-1 and therefore could not be compared precisely with Barnard's record (on which No. 11 was a virgin and No. 17 had an O-AM filling), but there was agreement in that the man on X-1 had had those teeth at the time of the crash. No. 13 and No. 14 were identical. The one tooth on which there was a discrepancy

was No. 16. According to Barnard's record, No. 16 had been extracted. No. 16 was present on X-1. Tadao Furue was inclined to believe that this was an instance of a dentist's marking a wisdom tooth extracted when it had not yet erupted. It is an important feature of dental identification that there be no inconsistencies that cannot be adequately explained between an antemortem record and recovered dental remains. Furue thought it likely that the man on X-1 was Barnard, and kept on going. Clint Butler's limited record showed only that Tooth No. 30 had been extracted; his record couldn't be compared with X-1's. Stanley Gross's record showed only four extractions—of No. 1, No. 16, No. 19, and No. 30—and the notation that No. 32 had been treated on January 23, 1944, for pericoronitis, a painful inflammation that often occurs when a tooth is breaking through the gum. Gross couldn't be ruled out dentally, because X-1 was missing his No. 1, his No. 16 was unreliable, and his No. 19, No. 30, and No. 32 had not been recovered. Stanley Lawrence's record showed that he was missing eight teeth, including No. 12 and No. 13, which X-1 had; Lawrence was not X-1. Joseph Mettam's dental record consisted of three extractions—two wisdom teeth and No. 9, which was present on X-1. Raymond Geis's record showed only that he had four teeth extracted—three wisdom teeth and No. 19, which X-1 did not have. Geis could not be ruled out dentally.

Furue had eliminated nineteen men physically against X-1; eleven of them had also been ruled out dentally. The twentieth man, Lawrence, could have been the man on X-1 physically but had been ruled out dentally. Furue now put a red index card with Charles Barnard's name on Stretcher X-1, even though his vicious twin reminded him that there was still a slim possibility that Stanley Gross was the man on X-1. If Furue had been less certain of X-1's identity, he would have put a blue card on it. No matter what the color of the card on the stretcher, as he turned to X-2 he would treat X-1 as if there were no card on it, and would compare Barnard's physical and dental record with the records of the dental remains on all the other stretchers.

After comparing his reading of X-2's remains with the physical records of all twenty-two men, just as he had done with X-1, Furue decided that the man on X-2 was probably Melvin

Walker. X-2 was one of six stretchers on which there wasn't a single tooth or jawbone fragment. Furue couldn't compare the man's dental record (and Walker had a good one) with the remains, so he put a blue card on X-2. He is far more cautious when he cannot make any dental comparison. X-2A got a red card with the name William Shrake. No one else on the plane was as tall, as thin, or quite as young as Shrake. Furue has devised a system for calculating the percentage of bones recovered for each remains. X-2A had a higher percentage than anyone else on the plane—66 percent. (X-19A had the lowest—8.6 percent.) Furue was positive that the man on X-2A was between twenty and twenty-two, because there were many stages of epiphyseal union for him to observe on the long bones; bones that usually grow together before the age of twenty were completely fused, those whose union usually takes place after the age of twenty-three were not. X-2A also had both clavicles and many vertebrae; most vertebrae have five epiphyses apiece, and these epiphyses, which unite after the age of twenty-three, had not begun to do so. Consequently, the man on X-2A couldn't be Keith Holm, although the two men were the same height and almost equally thin and Holm was only twenty-three and a half when he died. Shrake was twenty and seven months, and was also one of the few men on the plane with the combination of a good dental record and good dental recovery. There were twenty-six teeth on Stretcher X-2A, and the dental record was an extraordinary match, although Shrake's four wisdom teeth had been marked extracted and three that were recovered for X-2A were unerupted—Furue could see them in the jawbones. Furue had found that mistake even more prevalent with men of Shrake's age than with men of twenty-three, like Barnard.

The man on X-2B was between twenty and twenty-three, 64½ inches tall, and of medium build. That could be only Raymond Geis. Just one tooth was recovered for X-2B, but Furue considered it compatible with Geis's record; X-2B got a red card. Methodically, Furue identified X-3 (Charles Steiner), X-4 (Emory Young), X-4-17 (Weldon Frazier), X-4-17A (Stanley Lawrence), and X-5 (Robert Allred). Like Shrake, Allred was a man with a good dental record, and there were fifteen teeth on Stretcher X-5. Eight of the recorded fillings matched those on the remains, and so did four extractions, including two unusual ones—No. 7 and No. 13. Allred was the only one on the plane whose record showed he was missing Tooth No. 7. (Even Kachorek, who had had ten extractions, had Tooth No. 7, although a notation on his record next to that tooth—"periapical abscess"—suggested that it might have been the next one to go.) "I've identified men with no bones and far fewer teeth that matched, just on the teeth," Furue said, putting a red card on X-5, as he had on X-3, X-4, X-4-17, and X-4-17A. Furue also put a red card on X-6, identifying the remains as those of Clint Butler. Despite the fact that Butler's dental record was limited to one extraction (X-6 had had a fair amount of other dental work done), it matched the extraction on X-6, and the remains were unique among the twenty-two men: no one else in the short group was as young and as thin as Butler. Stretcher X-7 (Charles Samples) got a red card. Not only did Samples' dental record and the dental remains match well but Furue noticed that Samples had had his teeth cleaned by a dentist on January 4, 1944. In 1982, with 400-watt mercury-vapor lights shining down from the lab's ceiling on X-7's teeth, Furue was able to see that they had been professionally cleaned not long before the crash of the plane. X-9 got a blue card, X-10 a blue one, and X-10A a blue one. Furue felt quite sure that the man on X-10A was Staseowski on the physical comparison: no one else in the short group was as heavy or as old as Staseowski. Still, there wasn't a fragment of a jawbone or a tooth on X-10A with which Furue could have compared Staseowski's dental record of seven extractions, and at this stage in the identification process Furue never put a red card on a stretcher with no dentition, no matter how distinctive the remains seemed when they were compared with the records of the twenty-one other men aboard the plane. Staseowski was the only passenger on 41081 whose dental record showed that he was missing No. 1, No. 2, No. 3, and No. 4, four teeth that Furue, who has had nine extractions, also happened to be missing.

Tadao Furue, a lean but muscular man of 5 feet 6 inches, often compared himself physically with the men on 41081 who were in the short group. He is extremely conscious of his health. His daily lunch always consists of four or five pieces of fruit and

a cup of coffee, usually with a small piece of cake or a couple of cookies his wife has baked. He weighs himself twice a day; he believes that weight is one indicator of physical fitness. In the morning he weighs 145 pounds, in the late afternoon 143. "There's no need for me to go jogging at dawn, because I get plenty of exercise at work—especially when I'm walking from stretcher to stretcher segregating bones," he says. "My wife is an excellent cook. Sometimes she prepares Japanese food, other times Chinese food, American food, Italian food. Her spaghetti is delicious. I'm sure that after one of her dinners my weight goes right back up to a hundred and forty-five."

From Monday to Friday, Furue wears slacks, a short-sleeved shirt, and comfortable shoes with ridged soles to work. On Saturday and Sunday, he comes to the lab in a T-shirt, bluejeans, and sandals. Upon his arrival at the CIL, he puts on a short white coat. He says that the custom of wearing a white coat is a carryover from his student years ("It makes me feel like working"), and that the poor condition of his teeth is, too. "I had bad cavities in 1940, when I was a fifteen-year-old student, but I was too busy preparing for an important high-school examination to have them filled," he recalls in an older-but-wiser tone. "After Pearl Harbor, you couldn't get an appointment with a dentist. You were taken on a first-come, first-served basis, and usually had to wait three or four hours. I didn't want to wait, so I just took aspirin when I had a toothache. When I started at the university in 1945, I went to see a dentist, but by then it was too late. He pulled two of my teeth. Over the years, other dentists pulled five, and I pulled two myself. In addition to No. 1, No. 2, No. 3, and No. 4, I've lost No. 13, No. 17, No. 18, No. 19, and No. 31. I also have three gold inlays, on No. 5, No. 14, No. 30." The gold in No. 5 can be seen when Furue is talking. When he smiles, the empty space where No. 4 used to be is exposed to view; he has had two sets of removable partial dentures made, but both gave him so much trouble that he stopped wearing them. Furue's teeth could not have been X-1's, but he has calculated his Rohrer index, and when he weighs 143 it is 1.38, just .02 higher than Charles Barnard's—and .05 higher than Stanley Gross's.

* * *

According to Tadao Furue's reading of the remains, the man on Stretcher X-11 had been between twenty-four and twenty-eight years old, 66⅜10 inches tall, and of medium build. When Furue compared X-11 to the records of all the other men on the plane, starting with Allred, he was able to rule them out until he came to Barnard. When he compared the man on X-11 with Charles Barnard's record, there was a possibility that X-11 was Barnard, just as when he had compared the man on X-1 with Stanley Gross, the man on X-1 could have been Gross. At twenty-three years and ten months, Barnard was only two months under the bracket for X-11. Furue had deemed Gross a little too slight to be the man on X-1, and now deemed Barnard's build more on the medium side than that of the man on X-11. Gross, at 66½ inches, was closer in height to X-11's 66⅜10 inches, just as Barnard, at 67 inches, was closer to X-1's 67⅛10 inches. Furue thought that the man on X-11 was apt to be Gross, just as he had thought, after comparing X-1 physically with the other men on the plane, that the man on X-1 might well be Barnard. Only one of X-11's upper teeth had been recovered, but the entire mandible had been found. Furue now went through the dental records, ruling out many men dentally, as he had when he compared X-1's 897 with the 897s of the men on the plane. When he got to Charles Barnard's dental record, he spotted two major discrepancies: the man on X-11 had had No. 19 and No. 30 extracted, whereas Charles Barnard's record showed that he had both these teeth and that each had three fillings. Moreover, Barnard's record showed that he had two fillings on tooth No. 18; the man on X-11 had one. When the dental remains on Stretcher X-1 had been compared with Stanley Gross's dental record, Gross could not be ruled out, because only the teeth from No. 6 to No. 17 had been recovered among the remains on X-1, and Gross's dental record for these teeth was too limited. Because X-11's mandible and lower teeth had been recovered, Barnard could convincingly be ruled out dentally against X-11. There was also favorable agreement between X-11's mandible and Stanley Gross's record. Both the man on X-11 and Stanley Gross were missing No. 19 and No. 30. Something that particularly impressed Furue was their agreement on No. 32. Gross's record showed that he had been treated for pericoronitis for

that tooth on January 23, 1944. Next to X-11's No. 32 Furue had written "recent eruption." Wisdom teeth often break through the gums painfully and require treatment to relieve the pain. After Furue had finished comparing X-11's dental chart with the records of Stanley Lawrence, Joseph Mettam, and Raymond Geis, he put a red card on X-11 for Stanley Gross.

Fingerprints are the most widely used scientific method of identification in the United States. The Federal Bureau of Investigation has over 167 million sets of fingerprints in its current collection, which is believed to be the world's largest. No two fingerprints that the FBI has examined since it went into the business of collecting prints, in 1924, have ever been found to be alike. The prints of identical twins bear no more resemblance to each other than to the prints of strangers. In the case of skeletal remains, dentition is the most effective method of identification. A basic premise of dental identification is that no two mouths are alike. There are a hundred and sixty dental surfaces (thirty-two teeth times five surfaces) that may have decayed and been filled with various substances; there are a vast number of possible combinations of one or more missing teeth at various spots; there is the possibility of an almost infinite variety of porcelain crowns, bridges, and dentures, all of which make dental identification the second most specific method of comparison after fingerprints. Computers have been used to demonstrate that there are more than 2.5 billion possibilities in charting the human mouth.

In the population at large, it is likely that millions of people will have an O-AM filling on No. 13 and OL-AM, O-AM fillings on No. 14, in combination with eight virgin teeth—No. 6, No. 7, No. 8, No. 9, No. 10, No. 12, No. 15, and No. 16—as X-1 did. If just six more teeth had been recovered for X-1 and if No. 1 and No. 2 had the same fillings, No. 3 and No.18 the same two fillings, and No. 19 and No. 30 the same three fillings as those on Charles Barnard's dental record, there might only be tens of thousands of people in the population at large whose dental records would match X-I's dental remains.

Odontologists and physical anthropologists never have to concern themselves with the population at large. Circumstances narrow the probable population involved. In this instance,

Furue had to consider only the twenty-two men on 41081's manifest. While he was processing the twenty-two sets of remains simultaneously, he had to keep repeating the two-step pattern: he had to prove that the man on X-1 was Barnard, and he had to prove that the man on X-1 was not any of the other men on the plane, which he had now done when X-11 became Stanley Gross.

Before very much more time had elapsed, there were red cards for the man on X-12 (whom Furue was sure was Kachorek), X-14A (Holm), and X-19 (Mettam), and blue cards for those on X-13, X-14, X-15, 16, and X-19A. Stretchers X-12 and X-19 were the ones that included jaw fragments but no teeth. The information provided by these jaw fragments was compatible with Kachorek and Mettam's records. On X-12, for instance, a fragment of the right side of the mandible showed that No. 30 had been extracted and No. 31 and No. 32 were posthumously missing. Kachorek's record showed that No. 30 was one of his ten extractions and that he had had No. 31 and No. 32 at the time of his death. Thus, there was no dental contradiction between Kachorek's record and the jaw fragment on X-12. The information from X-12's jaw fragment did contradict the dental records of sixteen of the twenty passengers who had dental records. The jaw fragment also matched Kachorek's unique physical remains morphologically and was incompatible with the remains of the three other men whose dental records could not be ruled out when they were compared with X-12's No. 30, No. 31, and No. 32. It was also morphologically incompatible with the remains of X-13 and X-15, 16, who lacked dental records.

"Comparison equals identification" is a physical-anthropological/odontological axiom, but there is no generalization governing the number of points of comparison that must exist before a positive identification can be made. It is up to the individual physical anthropologist or odontologist to make this decision. When, in late 1982, Furue put a red card with the name Robert Allred on X-5 and commented that he had identified men with no bones and far fewer teeth that matched, he was thinking of Stanley Campbell. In 1979 a CIL team had visited a C-47 that had crashed into a high peak in Papua New Guinea's Saruwaged Range with five men aboard. Only a partial maxilla

and three teeth had been recovered at the site. When Furue compared the maxilla and teeth with the dental records of all five men, they matched the record of Second Lieutenant Stanley D. Campbell, the plane's pilot, and failed to match the records of the four other men—who were thus, in Furue's words, "excluded from association by negative comparison." He recommended that "this maxillary bone and teeth be identified as the only recoverable remains of Stanley Campbell." His recommendation was accepted. "Identification by exclusion" is also in the lexicon of physical anthropology and odontology.

After Furue finished comparing the physical and dental remains on the twenty-two stretchers with the twenty-two physical records and the twenty dental records (a formidable number of comparisons), there were red cards on fourteen stretchers and blue cards on eight. Six of the stretchers with blue cards were those that had no dental remains: in addition to the remains of X-2 (whom Furue believed to be Melvin Walker) and X-10A (whom Furue believed to be John Staseowski), there were those of X-9 (believed to be Carlin Loop), X-10 (believed to be Frank Ginter), X-14 (believed to be Robert Thompson), and X-19A (believed to be Harvey Landrum). The two other blue-carded stretchers were X-13 (Furue thought the man on X-13 was Thomas Carpenter, who lacked a dental record) and X-15, 16 (Furue thought this man was Harold Atkins, who also lacked a dental record).

Furue next attempted to "validate the last eight identifications," as he put it. In the absence of dentition, he had to resort to the use of personal effects or military equipment as a secondary means of identification, to corroborate his comparisons of the remains and the records.

The CIL team had dug up a small number of personal effects, or PE, on the crash site. Australian coins from the early forties had been recovered at eight X numbers. This wasn't surprising—in March 1944 American servicemen stationed in New Guinea were paid in Australian currency—but the coins could not help identify a particular individual. The same was true of a Honolulu Rapid Transit token stamped "Good for One Full Fare" found at the X-15, 16 site: during the Second World War,

most servicemen traveled to the Southwest Pacific by way of Honolulu, and many had ridden buses during their layovers. A camera had been found at the X-13 site. There was a roll of film inside, but when one of the sergeants attempted to develop it at the CIL he discovered that it had been ruined by the climate. The team had brought back a number of items that were referred to as PE but were actually "military equipment," because they had been issued by the government. Five GI Elgin watches had been recovered at five X numbers; there were serial numbers on the watches but no Elgin serial numbers on the men's records. The team had also returned with fifteen dog tags. Two dog tags stamped with the name Melvin F. Walker had been recovered at the X-2 site; they were the first pair that caused a blue card on a stretcher to be replaced with a red one. At the X-10 site, a set of dog tags and a silver disk with the name and serial number of Frank A. Ginter and a pair of dog tags on a long silver chain with John J. Staseowski's name and serial number enabled Furue to replace two more blue cards with red ones. At the X-14 site, a single, chainless dog tag with Robert C. Thompson's name eliminated a fourth blue card. Additional dog tags and personal effects, with the names of men on the plane's manifest whose stretchers already had red cards, persuaded Furue that these objects hadn't scattered when the plane crashed but had stayed with the remains. (On other crash sites excavated by CIL teams, both the remains and the personal effects had been recovered over much wider areas, and not always together.) At the X-4 site, the team had found Emory C. Young's dog tags, a silver bracelet engraved with his name, and a tattered leather wallet containing a faded picture, on which his name could still be read. At the X-4-17 site, the team had found Weldon W. Frazier's dog tags, at the X-6 site Clint P. Butler's, and at the X-11 site Stanley G. Gross's.

Furue is aware of such soldierly practices as swapping dog tags, and wasn't troubled that the team had also recovered a set belonging to a James A. Miller (upon the team's return to Hawaii, the CIL ascertained that Miller had survived the war) and a bracelet with the name and serial number of Robert A. Ambrose. The serial number on Ambrose's bracelet, found at the X-10 site, was 20283081. Frank Ginter's serial number was

20283103. In a Special Anthropological Narrative that Furue later wrote about 41081, he pointed out the closeness of the two service numbers and suggested that they might help clear up the mystery of the presence of Ambrose's bracelet at the crash site. Eventually, they did. It was subsequently learned that Staff Sergeant Ambrose was a buddy of Frank Ginter's. They had enlisted at practically the same time. Ginter, as a favor, took the bracelet to Sydney to have Ambrose's serial number inscribed on it. (In 1983 Ambrose, who now lives near Buffalo, was astonished when the bracelet was returned to him.) Furue was convinced, as he stated in his Anthropological Narrative, that on the basis of "exclusive physical matching . . . supported by the recovery of identification tag(s)/disc or bracelet" he had independently identified Walker, Ginter, Staseowski, and Thompson.

Blue cards were still left on four stretchers—those for X-9 (believed to be Carlin Loop), X-13 (believed to be Thomas Carpenter), X-15, 16 (believed to be Harold Atkins), and X-19A (believed to be Harvey Landrum). Both good and bad statistical luck had come into play in the partial recovery of the twenty-two thirty-eight-year-old, weathered remains. It was bad luck that Atkins and Carpenter lacked dental records: there was a fine recovery of teeth at the X-13 site and an excellent recovery of teeth at the X-15, 16 site. Furue's comparisons of the dental remains of X-13 and X-15, 16 with the dental records of the other men on 41081 had shown that both were compatible with these remains. As good statistical luck would have it, the four men who lacked either dental records, dental remains, or personal effects were sufficiently different in age and muscularity to enable Furue to satisfy himself and the other Tadao that he could tell them apart. He could differentiate between X-9 and X-19A because his readings of the remains indicated that the man on X-9 was older than the man on X-19A and more heavily built, and this was confirmed by Loop's and Landrum's records. Furue had estimated X-9's and X-19A's ages as older than Carpenter's, and here, too, Loop's and Landrum's records proved him correct. Furue had judged the man on X-15, 16 to be more muscular than either Carpenter or Landrum and younger than

Loop: he had accurately estimated X-15, 16's age as between twenty and twenty-five (Atkins was twenty-three) and X-9's as between twenty-five and thirty (Loop was twenty-six).

It could have worked out otherwise. If, for example, the last four men for whom the team had recovered only bones had been Young, Carpenter, Samples, and Landrum, Furue would not have been able to tell them apart. Furue had estimated the man on X-4 as 70½ inches in height, from twenty to twenty-two years old, and of average muscularity/medium build, and X-13 as also 70½ inches in height, from twenty to twenty-five years old, and of average muscularity/medium build. According to their records, Young (X-4) was 70½ inches tall, weighed 159 pounds, had a Rohrer body-build index of 1.26, and was twenty-eight days past his twenty-first birthday, and Carpenter (X-13) was 70 inches tall, weighed 152 pounds, had a Rohrer index of 1.23, and was twenty-two years and eight months old. Furue had estimated the man on X-7 as 69⁹⁄₁₀ inches tall, from twenty-three to twenty-six years old, and of slight muscularity/medium build, and the man on X-19A as 69⁹⁄₁₀ inches tall, from twenty-three to twenty-seven years old, and of slight muscularity/medium build. Samples (X-7) was 70 inches tall, weighed 141 pounds, had a Rohrer index of 1.14, and was almost twenty-four and a half years old. Landrum (X-19A) was 69½ inches tall, weighed 140 pounds, had a Rohrer index of 1.15, and was twenty-four years and eight months old.

If the men with the last four X numbers had been Young, Carpenter, Samples, and Landrum, Furue would have asked a CIL team to return to Mt. Thumb to try to recover additional remains. In 1978, a CIL team had recovered remains from a B-24 in Papua New Guinea. The reluctance of native helpers had forced the team to leave the crash site before it had completed the recovery, but Furue had been able to identify eight of the eleven men on the plane's manifest. Two tarsal bones had been kept at the CIL after Furue made these identifications. He was certain that they didn't belong to any of the eight men. Another CIL team went to the crash site in 1980 and recovered more bones and teeth. Furue was then able to identify two more passengers; the tarsal bones belonged to one of them. An elderly native who had seen the B-24 go down in 1945 had told the team

that one man aboard had survived the crash. He was badly injured but had walked away. His remains were never found.

The CIL had been prepared to return to Mt. Thumb if Furue had been unable to identify as many as twenty-two remains. When the team left the mountainside in April of 1982, one member, Sergeant David Kelly, was convinced that he would find bones in the vicinity of the partly deployed parachute if the team had to return. Kelly would not have minded going back to Mt. Thumb: unlike some other crash sites, this one had not required long uphill-downhill walks to get in to and out of; he thought the helipad the men from Manumu had built would still be usable in the summer of 1983. The CIL did not have to return to 41081, because, as Furue wrote in his Special Anthropological Report on January 14, 1983, "upon anthropological and odontological evaluation 22 mutually exclusive identities were simultaneously established; all other hypotheses were scrutinized and nullified."

Sergeant Kelly came to believe that the parachute had been aboard the plane and had deployed itself upon impact.

In October 1982 Tadao Furue went to Japan on a long-planned and often postponed trip to visit his sister. He was back at the lab in early November. Furue, who has no Ph.D. or M.D., has been called Doc by almost all the Americans he has ever worked with. During the summer and fall of 1982, while he was segregating the remains from 41081, his colleagues at the CIL often asked, "How many, Doc, how many?" There was great rejoicing at the CIL when, in late November, Furue was able to answer "Twenty-two."

Furue lives, with his wife, Saeko, and their daughter, Yuko (a nurse with a B.S. from the University of Hawaii, whose hobbies include hula dancing), in a three-bedroom condominium on the twenty-first floor of an apartment building in downtown Honolulu. His father was a banker who traveled extensively; Furue was born while his parents were living in Taipei. His father worked in the United States for four years, and to this day Furue wishes he could speak English as fluently as his late father did. Furue's father was of mixed Shinto and Buddhist heritage, and his mother's family were Buddhists. When Tadao was growing

up, he accompanied his father on visits to Shinto and Buddhist shrines. During the Second World War, when turkeys were in short supply, he and his sister also accompanied their parents each Christmas Day to a restaurant on the Ginza, downtown Tokyo's main thoroughfare, where they ate a turkey dinner. Tadao and Saeko Furue (who is of Buddhist origin) are as cosmopolitan as his parents were. They sent Yuko to a Protestant high school in Japan, they maintain a Buddhist shrine in their bedroom, they go to the Japanese Consulate General in Honolulu on Japanese national holidays, and they celebrate Thanksgiving. "I check the epiphyses of the turkey to determine its age when I carve it," Furue says. "It's a professional reflex."

The Furues also send Christmas cards and decorate a plastic tree. Their apartment is elegant, and ample in size (Furue uses the third bedroom as a study), but its storage space is limited. He keeps the Christmas tree, along with its lights and ornaments, in a storage shed behind the lab. When he came home from work on December 9, 1982, he saw that Saeko had covered one of the living-room coffee tables with a red-and-green cloth. The table had obviously been prepared for the tree. In late fall, Furue had promised himself that he would complete the identifications of the men on 41081 in time for the CIL to send their remains to their families before Christmas. He knew in early December that he wouldn't be able to keep his promise; too much paperwork remained to be done before the remains could leave the CIL. Because he had been unable to keep his promise, he didn't feel that it was appropriate for him to celebrate Christmas that year. He told his wife he wouldn't be bringing the plastic tree home. "Saeko is a traditional Japanese woman," he says. "She keeps house, does most of the grocery shopping, so that I can concentrate on my work, and sews all of her own clothes and most of Yuko's. She understood."

Photographs, sketches, processing charts, forms, and narrative accounts dealing with the recovery and identification of the remains from the Mt. Thumb B-24 would be sent from the CIL to the Directorate of Casualty and Memorial Affairs, in Alexandria, Virginia, and, later, to the relatives of the twenty-two men. Some of the paperwork—a crash-site sketch by Sergeant Richard Huston, for example—had been completed in the first half of 1982.

In June 1982 Sergeant Jay Warner had taken a photograph of the eighteen stretchers covered with remains from the crash-site prior to segregation. For some months, each of the segregated remains had lain on a white sheet on one of the twenty-two stretchers. The sheets were wider than the stretchers and were always folded over the remains at the end of Furue's working day and unfolded in the morning. In January 1983 each remains that Furue had identified was transferred to a stretcher with a sheet folded double. Warner would take a photograph of each remains: the doubled sheet provided a background with more contrast. Every family was to receive a June photograph of all the stretchers and a January photograph of one of them.

Among the last forms to be completed for each man was a Department of Defense Form 892. During segregation, Furue had just written numbers on the left half of the copy of this form with one of the many pens that filled many pockets in his white lab coat—an estimated age, an estimated height, bone measurements—along with a few words describing the estimated muscularity. The right half of an 892 consists of a diagram of a human skeleton. While Furue was segregating the remains, he had only jotted down on the skeletal diagram the X numbers of bones that had been transferred from one stretcher to another. In January everything from the copies had to be typed up on the 892 and other information added to it, and every bone or partial bone that was missing from a stretcher had to be filled in with black ink on the skeletal diagram. It was slow, painstaking work. In a box on the lower-left side of the 892 for "Remarks or Statement of Anthropologist," Furue commented on each man's "dexterity," or right- or left-handedness. He had concluded that nine of the men on 41081 were right-handed and two left-handed. To assess right- or left-handedness he generally required both humeri and/or radii, ulnae, and scapulae. He lacked sufficient bones to assess the handedness of eleven men. "Dexterity: UTD" (i.e., undetermined) was typed on their 892s. Comparisons of the handedness of a remains with recorded handedness have been of use to Furue on some occasions, but handedness was not included in the records of any of the men on 41081.

In early January, twenty-two 897s also had to be typed up, so

that anyone reading one of the forms could easily compare the dental chart of the remains with the dental chart from the man's record. There was a line on the lower-left side of the 897 for the estimated height of the remains and another for the estimated age, and corresponding lines on the 897's lower-right side for the man's height and age of record.

In 1958, Dr. Mildred Trotter wrote that 68 percent of all white men whose heights were derived from measuring their femurs and applying her formula would fall within the formula's plus-or-minus-3.27-centimeter standard error of estimate and 95 percent would fall within the range of two standard errors. The other 5 percent would deviate even more. Textbooks on physical anthropology recommend that, when using Trotter's formulas, "to be on the safe side, double the margin for error." It was striking to see, on the line for height on the 897s, how accurate Furue's estimates had been, no matter which bone or bones he had used to determine them. In two cases, his estimated heights and the men's recorded heights were identical; in twelve the deviation was between 1/10 and 5/10 of an inch; and in six it was between 1/2 and 7/10 of an inch—all well within the standard error of estimate. In one case, in which he had used a femur, he was off by 1½ inches—⅐ of an inch outside the standard margin of error. And in a case in which he had used a humerus he was off by 1⅘ inches—⅕ of an inch outside the standard margin. (It was later discovered that Bob Allred had added an inch when reporting his height for the records when he was commissioned, which accounted for a large part of the discrepancy.) "People who have no experience measuring bones or people who are measuring the bones of a heterogeneous population may have to double the margin of error," Furue says. "I've measured the bones of thousands of individuals, and I'm fortunate that the military population I usually work with is homogeneous. If I doubled the standard margin of error, someone whose height I estimated from his femur as being 69 inches could be anywhere from 66½ inches to 71½ inches. That would cover sixteen of the men on 41081." Furue's age estimates all proved to be accurate when they were compared with the ages on the records. They were still accurate (he learned in 1983) when it turned out that two men were a year younger and an-

other man two years younger than they had claimed to be when they entered the armed forces.

There were boxes for "Remarks" at the bottom of both the left and the right sides of Form 897. Furue is able to read many things from remains in addition to race, age, sex, height, muscularity, and dexterity. He had observed that William Shrake's left ulna was deformed, had taken a photograph of the bone, and had commented in the box on the lower-left side of Shrake's 897 that there was an indication of an old elbow injury on the left ulna. (Shrake's record made no mention of any such injury.) On most forms, in fact, nothing had been typed in the right-hand box, for remarks from the record, except the man's race and the last military unit with which he was known to have served. Emory Young's record showed that he had fractured his right great toe in 1931, but none of his toe bones had been recovered. According to Joseph Mettam's record, he had once suffered a skull fracture and had a "skull indentation over the right orbit." To see this, Furue would have had to study the frontal bone of Mettam's cranium; it had not been recovered. Robert Allred's record showed that he had a deviated septum and flat feet. Allred was missing the bones that Furue would have needed to see either condition. Flat feet had figured in a number of identifications that Furue had made in the past. A case that stood out in his mind was that of Captain Robert J. Thomas, one of eleven men whose remains the Vietnamese had turned over in 1978. The Vietnamese had given the names of seven of the eleven men but had given only the dates of death of the four others. Thomas, a B-52 copilot, had been turned over as Walter Ferguson, another member of the crew of the B-52, which was hit by a surface-to-air missile on December 18, 1972, during a bombing raid over Hanoi. Furue had found that the remains turned over as Ferguson's matched Thomas's physical and dental record. The remains had flat feet. Ferguson didn't; Thomas did. (Furue identified Ferguson as one of the four men the Vietnamese hadn't named on that turnover.) Furue rarely hears how the families of the men he has identified regard his work, but in Thomas's case someone sent him a copy of a 1979 newspaper story in which Thomas's widow, Earlyne, was quoted. "They showed me pictures of the remains, and went over the information they had, but I guess it was the flat feet that convinced me," Mrs. Thomas told the newspaper reporter who spoke to her about her husband. "He had very flat feet."

Another form that would be sent to Casualty and Memorial Affairs, a Department of the Army Form 2773-R, gave a brief account of the crash and of the recovery of the remains by the CIL team; a paragraph describing the condition of the remains; a short account of the segregation and identification process that had taken place at the lab; and a list of all the passengers and crew members on 41081. Form 2773-R and Furue's Special Anthropological Narrative, a six-page account of the identification of each of the twenty-two men, were among the last documents typed. When Furue signed the Special Anthropological Narrative, he told Major Johnie E. Webb, Jr., the commanding officer of the CIL, that the twenty-two remains from 41081 were "the hardest I've ever worked on."

On Tuesday, January 11, 1983, Major Webb telephoned Lieutenant Colonel William R. Flick, an officer with Casualty and Memorial Affairs in Alexandria, to say that the CIL would be making positive recommendations on all twenty-two men aboard 41081. The CIL can only recommend identifications. A Board of Officers must approve the recommendations. In January 1983 the Board of Officers for Second World War cases was composed of three officers in the Directorate of Casualty and Memorial Affairs—Flick, Lieutenant Colonel James W. Gleisner, and Colonel J. E. Gleason—and two civilians, both of them identification specialists who worked for Casualty and Memorial Affairs. Webb told Flick that the CIL would be sending all the 41081 paperwork off to Alexandria on the fourteenth.

The paperwork reached Casualty and Memorial Affairs on January 17. At 4:00 P.M. on January 20, the Board of Officers "convened" and approved the identifications of all twenty-two men on 41081. Actually, the board members merely scanned the documents submitted by the CIL and then "duly" approved the identifications without formally convening. No board had ever rejected a recommendation made by Furue. It is doubtful whether the colonels and civilians who sat on the board, none of whom were physical anthropologists, were capable of judging

what might have taken Furue days, weeks, or months to do. They could not have identified the remains in the first place. No relative of a Second World War casualty had ever questioned a Furue recommendation, and although the families of a number of Vietnam servicemen had asked to have his work reviewed by dentists or physical anthropologists, no dentist or physical anthropologist had ever overruled Furue.

One example of a family's requesting verification of a board-approved Furue recommendation had occurred less than a year before. Early in 1982, the CIL had received two paperboard boxes that were believed to contain the remains of a United States serviceman missing in Laos. These skeletal remains had reportedly been recovered by Laotians from a crash site, and the Laotians had given the location of the crash site. After segregating the remains, Furue said they were the remains of one individual. On February 26, after he had compared the remains, which were reasonably complete and included a mandible and Teeth No. 17 through No. 32, with the records of all the men missing within 200 miles of the crash site, he recommended that the remains be identified as those of Nicholas G. Brooks. Lieutenant Commander Brooks, a bombardier-navigator, had been shot down while his A-6A was making a strike over the Ho Chi Minh Trail on January 2, 1970. Gladys and George Brooks, two of the most active members of the National League of Families of American Prisoners and Missing in Southeast Asia, had reason to believe that their son not only had survived the crash but had been captured and had escaped from captivity at least once. In March they had their son's remains flown to their home in New York state, and had their family dentist, who had taken care of Nicholas Brooks' teeth until he entered the United States Naval Academy in 1962, examine the dental remains. He recognized some of the work he had done on his former patient's teeth.

"Are you as sure as if it were your own son?" the Brookses asked.

"Positively," the dentist replied.

George and Gladys Brooks wanted any additional information they could obtain about the cause of their son's death, the date of his death, and the spot where the remains—described by

Furue as weathered—had lain between the time of his death and their exhumation. The military sent the remains from New York to Washington, D.C., and there they were examined by Dr. J. Lawrence Angel, a curator of physical anthropology at the Smithsonian Institution's National Museum of Natural History. Dr. Angel answered the Brookses' questions to the best of his ability. Neither the date nor the cause of death could be definitely determined, he stated. In an opinion he wrote on March 22, 1982, he said that the remains had lain in reddish, very acid soil for ten or more years, and that he would not have been surprised if the time were longer than the twelve years that elapsed between the date Nicholas Brooks' plane was shot down and the time his remains were turned over. He also said that his observations of the remains "fit the life data of Lt. Cmdr. Nicholas G. Brooks." Dr. Angel had estimated Brooks' height as between 68½ inches and 71½ inches and his age as between twenty-two and twenty-nine. Furue had estimated his height as 70⅜ inches and his age as between twenty-five and thirty. Nicholas George Brooks was 70 inches tall, and on January 2, 1970, his age was twenty-six years seven months and fourteen days. In another case of Furue's that was reviewed by a distinguished physical anthropologist, not only were the anthropologist's age brackets wider than Furue's but the actual age of the individual involved was not within the brackets. The anthropologist had to be asked to rewrite his opinion. One physical anthropologist who has worked with Furue says that many other members of their profession have far greater experience in other realms of knowledge—such as assessing the antiquity of remains dug up on archeological sites—but that no one can hold a candle to Furue in identifying remains from the country's last three wars. Some go as far as to say that reviewing Furue in his special area of expertise amounts to an academic exercise, because no other physical anthropologist has his experience in dealing with thousands of skeletal remains not only from the military but also from civilian plane crashes and, occasionally, coroners' offices.

Recently, some of Furue's Vietnam-era identifications have been the subject of controversy. Last year, the CIL received remains from a site in Pakse, Laos, where an American airplane had crashed in 1972 with thirteen men aboard. After working

with the remains for four months, Furue recommended that positive identifications be made of all thirteen. The Armed Services Graves Registration board accepted Furue's recommendations. Family members of some of the men who had been identified refused to accept the identifications, pointing out, in several cases, that Furue had claimed a positive identification on the basis of only a handful of bones. In response, the Army commissioned an independent review of the CIL's overall work by two physical anthropologists and an odontologist. The review panel spent three days at the CIL studying Furue's recommendations on thirty sets of remains, including those of the Pakse victims. "We did not find that any of the bodies in question had been misidentified," one physical anthropologist wrote, but he added, "We were not able to make many of the identifications in these cases." Regarding the thirteen Pakse cases, the panel concluded, in part, "Two of the bodies were acceptably identified, and there is no real reason to doubt any of the others. However, we did not feel that there was sufficient evidence to establish the other identities either." Furue stands by the identifications.

The panel made a number of recommendations that it felt might improve the "credibility" of the identification process, including the hiring of a dentist with training in forensic odontology and the hiring of a nationally or internationally known forensic anthropologist, who would validate the CIL's identifications. "This person should be at the academic level of full professor, full curator, or laboratory director," the panel wrote. "He or she should also be a diplomate of the American Board of Forensic Anthropology or have some similar form of established credentials." The panel recommended that forensic anthropologists and odontologists be added to the review board that approves the CIL's identifications. The panel also recommended that Furue be retained as senior anthropologist. The Army is now putting these recommendations into effect.

The scarcity of the remains from Pakse was unusual. Ordinarily, when Furue identified Vietnam-era remains, such as Nicholas Brooks', he had much more material to work with than he did with Second World War remains. The dental records were always more precise, and almost always included X-rays taken during the time of military service. Nicholas Brooks' teeth

had been X-rayed ten times between 1961 and 1969. Antemortem X-rays reduce the opportunities for dentists to make errors in charting teeth. X-rays will show whether a wisdom tooth has been extracted or has not yet erupted, and whether a second molar has drifted into the position of a lost first molar. If there had been X-rays in Charles Barnard's missing-in-action file, Furue not only would have known that No. 13 had an O-AM filling and No. 14 an OL-AM, O-AM filling but would have been able to see the shapes of these fillings and could have compared them with postmortem X-rays he would have taken of X-1's teeth. If two people have fillings on the same surfaces of the same teeth, the fillings will usually appear different in X-rays. X-rays also reveal the precise shapes of jawbones and teeth, the spaces between individual teeth, and the angles at which they fit into their sockets.

Over the past dozen years, when Furue has not been working evenings and weekends identifying remains he has spent his free time perfecting "cranio-facial superimposition," a process that makes the identification of skeletal remains still more specific. The setup he uses to do superimpositions consists of lights, mirrors, a fine-mesh screen, and a 35-mm camera, and enables him to place a photograph of a known individual (often his high-school-yearbook or his wedding photograph) over a photograph of an unknown individual's skull taken from the same distance and the same angle as the photograph to see if they match. Those who have observed Furue's demonstrations of photographs that do match—and photographs that don't—are almost always impressed. Tadao Furue used cranio-facial superimposition as a supplementary method of identifying Nicholas Brooks. He has since carried superimposition a step further: in recent years, he has been superimposing antemortem and postmortem X-rays to make even these comparisons more specific. In late 1983, when Furue was given the scant remains of the two young men killed in the Marine barracks in Beirut whose remains could not be identified at the Frankfurt mortuary, he successfully superimposed an X-ray of a partial mandible of one of the two unknown remains on a dental X-ray of Lance Corporal David M. Randolph, and he successfully superimposed a postmortem mandibular X-ray on an antemortem dental X-

ray and also on X-rays of a skull suture and a sinus of Lance Corporal Curtis J. Cooper. "Without superimposition, I couldn't have identified either young marine, because of the scarcity and condition of the remains," Furue says. By December 1983, after identifying Randolph and Cooper, Furue had seen newspaper photographs of some of the men on 41081. He wished he had had the photographs a year earlier, so that he could have tried superimposing them.

The colonels and civilians assigned to Armed Services Graves Registration boards respect Tadao Furue's integrity as well as his expertise. Most of them have worked with him in Japan, Vietnam, Thailand, or Hawaii, and they know that if he lacks sufficient remains to identify an unknown individual he will always say so. They also know that he will not identify a remains, no matter how complete it is, if he isn't convinced that it matches a record. By January 20, 1983, the day the Board approved Furue's recommendations of all twenty-two men on 41081, an extraordinary amount of pressure had been put on the CIL to identify a young American whose remains were recovered in 1972 on the perimeter of a military camp near An Khe, in South Vietnam. The remains had traveled from An Khe to the mortuary at Tan Son Nhut, then to Thailand, and finally, in 1976, to Honolulu. By 1981, the unknown remains, tagged X-15, had been unsuccessfully compared with the relevant records of all the nearly 2500 unaccounted-for Americans. In 1982, X-15 was compared with the records of the known Vietnam deserters; it did not match the deserters' records, either. Casualty and Memorial Affairs attempted to persuade Furue to say that the remains were those of a young man who had perished in the same general area as X-15; they weren't, and he refused. On January 2, 1983, a record that had been misfiled at Fort Benjamin Harrison under "Discharged in absentia" surfaced and was sent to Alexandria, where an identification specialist thought he recognized it as X-15's. (X-15 was missing Tooth No. 8, a front upper tooth, which was an even rarer tooth for a soldier to be missing in the 1970s than in the 1940s.) The record was sent to the CIL. It took Furue only a few minutes to say that the long-found remains matched the long-lost record.

* * *

In 1973 Congress directed the Secretary of Defense to select an unknown Vietnam serviceman to represent all the dead of the war that had divided the country more than any other since the Civil War. In 1975 a crypt was built at Arlington's Tomb of the Unknowns to contain these remains, but for years it stayed empty. In 1921 when the first unknown soldier—a casualty from the First World War—was buried at Arlington, there were more than 1600 unidentified remains to choose from. On May 30, 1958, when an unknown soldier from the Second World War was honored, there were over 8500 to choose from. The same day, an unknown soldier from Korea was also interred, and there were over 800 to choose from. Because of the prompt evacuation of the dead and wounded by helicopter, improved military record-keeping, and scientific advances in identification techniques, there had never been more than four Vietnam unknowns at the CIL at any one time. Groups like the National League of Families had successfully fought the selection of a Vietnam unknown, because they feared that it would lead to a slackening of government efforts to search for the individuals still unaccounted for. In the spring of 1984, however, the pressure from groups like the Veterans of Foreign Wars and the American Legion combined with the Administration's eagerness to make a controversial war more respectable by honoring those who had fought in it resulted in a Defense Department decision to choose a Vietnam unknown from the four remains then at the CIL.

In choosing an unknown from earlier wars, an administrative procedure of forgotten origin was followed: only remains that were as much as 80 percent complete were selected. These so-called "best" remains of the 1920s and 1950s were the worst choices in the 1980s, because of the progress in identification techniques, so the criterion of 80 percent was waived for the Vietnam unknown soldier. X-15 was 26 percent complete but had been identified once the right record was found.

One of the four remains at the CIL in early 1984 was ruled out because it was 95 percent complete. A second remains, which had been turned over by the Vietnamese in 1983, was not a candidate, because Furue had successfully superimposed a

scapula from the remains over a chest X-ray from the record of one of the unaccounted-for, and in the CIL's opinion there was an excellent likelihood of identifying him if the Vietnamese turned over additional remains. The third remains at the CIL had been part of a 1978 turnover of four from Laos. One of the four had been identified as an American Air Force pilot, but two others had proved to be Southeast Asian Mongoloids. The bones of the fourth were those of a Caucasoid, but there was no evidence that he had been a soldier.

The fourth remains at the CIL at the beginning of 1984 had been found by a South Vietnamese Army reconnaissance team in late 1972 near a town about 60 miles north of Saigon. The remains were eventually given the number X-26. They consisted of six bones. Along with the remains, which were only 3 percent complete, the reconnaissance team had brought in a few objects such as remnants of a flight suit, of a pistol holster, and of a parachute, and a one-man inflatable raft. Furue determined that X-26 was a Caucasoid man of average muscularity, whose height had been approximately 68.4 inches and who had been between twenty-six and thirty-three years old. The only men in the killed-in-action/body-not-returned category within a 2500-square-mile area of where X-26 had been found were two men in a helicopter and the pilot of a fighter plane; both aircraft had crashed, as it happened, on May 11, 1972. Several sergeants at the CIL were convinced that X-26 was one of the two men from the helicopter, but Furue was not certain. The Vietnamese reconnaissance team's report had been disturbingly vague, and the condition of the six bones—they showed no evidence of trauma—was at variance with accounts of both crashes. Furue was asked to go to Washington and recommend to the National League of Families that X-26 be chosen as the Unknown Soldier of the Vietnam War. He declined to go. He believed that if additional remains of X-26 were ever found he could identify him. On April 13, 1984, Caspar Weinberger designated X-26 as the remains that would be buried at Arlington.

Johnie Webb and Tadao Furue refuse to discuss the Vietnam Unknown. "Putting X-26 in the Tomb of the Unknowns was politically expedient," a former CIL sergeant says. "At best, it was premature. I'll bet Doc considered him unidentified but not unidentifiable. Perhaps it was appropriate to the Vietnam War. So much else about it was political. Everything connected with X-26 has been ordered shredded, but you can't shred what's in men's minds. If we ever get into South Vietnam, the way we got into Laos, and find additional remains that match those in Arlington, there could be a problem."

The CIL is always under pressure to identify remains from Vietnam, but in this case it was under pressure to identify the twenty-two remains found on Mt. Thumb as well. On April 29, 1982, as soon as Bruce Hoy had returned from the crash site to his office, he telephoned the editor of the country's leading English-language newspaper, the *Post-Courier*. Hoy is eager for publicity, because he believes that it will help him promote the Aviation, Maritime, and War Branch and thus stir up interest that will lead to the discovery of more missing planes. A *Post-Courier* photographer took photographs that day of three CIL team members standing in front of 41081's tail, and one of its reporters interviewed Lieutenant Colonel David C. Rosenberg, Major Webb's predecessor as commanding officer of the CIL, and Bruce Hoy. That evening, Hoy was also interviewed by a representative of the Australian Associated Press. By May 1, an AP story about the CIL's recovery had started to run in newspapers all over the United States. The AP story, often accompanied by a *Post-Courier* photograph of 41081's tail, quoted Hoy and Rosenberg and mentioned the date of the crash, the plane's itinerary, the number of men aboard, and the units to which some of them had been assigned.

Among the millions of Americans who read the AP story in their local newspapers were relatives of Robert Allred, Frank Ginter, Keith Holm (the plane's navigator), Melvin Walker, and Emory Young. The relatives had kept the letters they had received from the headquarters of the Army Air Forces and from the Department of the Army in the 1940s. The facts in these letters—the date of the crash, the plane's itinerary, the type of plane, and the plane's use as a transport on March 22, 1944—jibed with the facts in the AP story. Within a few weeks, the relatives got in touch with the CIL. On May 20, Andrew Ginter, of Clarence, New York, a small town on the outskirts of Buffalo,

wrote to Honolulu to say that the report he had read in the Buffalo *Evening News* about the B-24 wreckage found on Mt. Thumb sounded as if the plane might be the one his brother Frank had been on; he said he would appreciate any information the CIL might be able to send him. A week later, Andrew Ginter received a letter from Colonel Rosenberg, which read in part:

> A review of the manifest of the aircraft shows that Staff Sergeant Frank Ginter, 20283103, was on the aircraft when it became missing on 22 March 1944. However, we do not know whether or not your brother was among those recovered.
>
> All remains recovered from the aircraft are now in the laboratory, here in Hawaii, undergoing forensic examination. At this time, we are not certain how many remains were actually recovered, and no specific identities have been determined. The laboratory examination will take some time before any positive identification can be established.
>
> This is all the information that is available at present. Should you have additional questions, you should contact Mr. John Rogers, Casualty and Memorial Affairs Directorate, office of the Adjutant General, Headquarters, Department of the Army, Alexandria, Virginia 22331. You may call Mr. Rogers collect at Area Code (202) 325-7960.

The CIL also received letters from people whose brothers, uncles, and cousins had been aboard other planes that disappeared in New Guinea during the Second World War. Until Colonel Rosenberg left the CIL, on June 7, 1982, for a new assignment, he answered a number of these letters. "Records available to this organization show that Staff Sergeant Stoeber was assigned to a B-25, tail number 41-12515, that became missing on August 30, 1944, in the vicinity of the Poi River, western New Guinea, which is called West Irian, and is now part of the country of Indonesia," Rosenberg informed one correspondent. "The aircraft was en route from Nadzab to Owi Island. We have no other specific information on Staff Sergeant Stoeber, but he was definitely not on the aircraft mentioned in the article. Thank you for your interest. It has been a pleasure to have been of service to you."

It did not surprise men like John Rogers, a civilian, who by 1982 had worked at Casualty and Memorial Affairs as an Army identification specialist for thirteen years, that there were so many inquiries. He knew of many mothers who had gone to their graves without giving up hope of hearing something about the fate of their missing sons. In 1970, the year of her death, Carlin Loop's mother read a brief newspaper account of an American Second World War plane that had been found by a Lutheran missionary on a mountain near the north coast of New Guinea. When she wrote to the Army to inquire whether her son had been on the plane, she was informed that the plane the missionary had happened upon was an A-20, which had failed to return from a bombing raid on March 12, 1944, ten days before her son's plane disappeared.

The relatives of Allred, Ginter, Holm, Walker, and Young wrote or called John Rogers during the summer and fall of 1982 to give him the dates they would be away from home on vacation or to ask if the identifications had been completed. Rogers telephoned them once or twice to report that he had no news for them. On November 22, 1982, Colonel Flick wrote to the relatives of the five men to give them "an update on the processing of the remains recovered," which, he explained, had taken much longer than was originally anticipated. "We cannot predict when the identification processing will be completed, but please rest assured that you will be notified immediately of the scientific results," he wrote. He said he regretted the delay and realized the anxiety that it was causing the relatives. He did not, of course, mention the pressure that the AP story was putting on the CIL or the anxiety felt by Furue, whose work could not be expedited by the knowledge that the relatives of five men had been waiting for months for him to complete it. In December, while the paperwork was being completed at the CIL, John Rogers and Douglas L. Howard, a sergeant in Casualty and Memorial Affairs, were given the job of tracing the next of kin of the seventeen men on 41081 whose families had not read the AP story. Rogers wrote down the names, ranks, and serial numbers of the five men with whose relatives he had been in touch, and the relatives' names, addresses, and telephone numbers, on five pieces of legal-size, lined yellow paper. On seventeen similar

sheets of paper, Douglas Howard recorded the names, ranks, and serial numbers of the seventeen other men and the name or names and the address or addresses of their next of kin as they had been listed in the men's missing-in-action files. Some men had listed only one next of kin (a mother or a father), some had listed two (a wife and a mother, or two brothers). Rogers did some preliminary work on the next of kin, which consisted primarily of consulting out-of-town telephone directories in the Pentagon library and long-distance-information operators. He checked to see if Joseph Kachorek's mother, Stella Kachorek, of 2477 South Fourth Street, Milwaukee, Wisconsin, was still listed in the Milwaukee telephone book.

On January 11, 1983, the day Webb and Flick spoke on the telephone, Rogers was instructed to call the relatives of Allred, Ginter, Holm, Walker, and Young and tell them that the five men had been identified. On the twelfth, he and Howard started calling the relatives of sixteen of the other men on 41081; Colonel Gleason, of the Board of Officers, had said he would find the family of the seventeenth man.

The most useful tool for tracking down the next of kin was the telephone directory. It took Rogers one call to find the relatives of John Staseowski. His father had died when he was three, and his mother had remarried. She was listed in his missing-in-action file as Mrs. Veronica Rybski, of 166 Homestead Avenue, Holyoke, Massachusetts. A Walter Rybski, of 418 Homestead Avenue, was in the Holyoke phone book. John Staseowski, one of Mrs. Rybski's nine sons and daughters by her two marriages, was her oldest child and the only one who was no longer alive; Walter Rybski was a half brother of John Staseowski. His first reaction to the news that Rogers gave him was astonishment. He had long since given up hope that John would be found, as had the brothers and sisters, if not the mothers, of the other men on 41081. He had no idea that anyone was still looking for Second World War missing planes in New Guinea. Walter Rybski's greatest regret was that his mother hadn't lived to learn of the recovery of her son's remains. "It's an odd thing about the number twenty-two," he said a few months later. "The plane crashed on March 22, 1944, with twenty-two men on board, and my mother died on March 22, 1980."

Clint Butler was from Little Rock, Arkansas; his mother, Grace, who was listed as his next of kin, was dead, but he too was from a large family—he was one of eleven children—and five of his brothers lived in Little Rock and were listed in the telephone directory.

Joseph Mettam's mother had lived in Solana Beach, California, when her son went off to war. She had died years earlier and there were no Mettams in Solana Beach, but an information operator found a listing for a Mettam in nearby Encinitas; he proved to be a cousin of Joseph Mettam's, and furnished Rogers with the telephone numbers of Joseph Mettam's sister and brother, who lived elsewhere in California.

Harvey Landrum's parents had lived in Kilgore, Texas. Some years earlier, his only sister had separated from her husband and had returned to Kilgore to be near her parents. After her mother died, in 1978, she had moved into her parents' house and had cared for her father until he died, in 1979. She had stayed on but had never got around to changing the listing in the telephone directory, so in January 1983, John Rogers had found her by calling the number of her late father, whose name was also Harvey Landrum.

Charles Barnard had grown up in Wadsworth, Ohio. There were three Barnards in the Wadsworth telephone book. Two of them, including the first one Rogers called, A. Gary Barnard, were nephews of Charles Barnard. Gary Barnard telephoned his father, Amos, who had moved to Florida. Amos Barnard called his brother Charles's widow, who had remarried and was living in a small town in Missouri. She in turn telephoned her daughter, Nancy Barnard Linthicum, who was living in another small town in Missouri.

Of the twenty-two men on the plane, nine had been married, and four had children born shortly before or after the crash. Carlin Loop and his wife had been living in Salina, Kansas, when he went off to New Guinea; a nephew who was listed in the Salina telephone directory put Rogers in touch with Loop's son, Larry, who was also living in Missouri.

Weldon Frazier was from a small town in Texas, Thomas Carpenter from a small town in Alabama, and William Shrake from a small town in Indiana. It was easy for Rogers and Howard to

get in touch with their brothers, who still lived in or near those small towns.

Where telephone directories failed to turn up relatives, postmasters were sometimes of assistance. Harold Atkins had listed two brothers as his next of kin; one had lived in Rosebud, Montana, the other in Gallatin Gateway, Montana. There were no Atkinses listed in the telephone books of either small town. Rogers called the postmaster of nearby Bozeman, Montana, who gave him the name, address, and telephone number of another brother, who was living in San Francisco. A postmaster in West Virginia helped Rogers trace the family of the late Charles Samples, of Smithers, West Virginia. "Everyone in rural West Virginia seems to know someone living on a hill or in a hollow," Rogers commented several months later.

It took the police to help the Army find the families of three of the men on the plane. Stanley Lawrence's father had lived in Eau Claire, Wisconsin, until his death. The police found one of Stanley's brothers in nearby Chippewa Falls—Myron Lawrence, who had been flying an American flag outside his home ever since Stanley's plane went missing. (Not the same flag; Midwestern winds had shredded about two flags a year.) The police in Robert Thompson's home town, Anniston, Alabama, found a stepbrother of his there; he got in touch with Thompson's sister, who had moved to Georgia. Joseph Kachorek's file listed his mother, Stella Kachorek, of Milwaukee, as his next of kin, but she was not listed in the Milwaukee directory, nor were any other Kachoreks. The police led the Army to one of Joseph Kachorek's three brothers, all of whom still lived in Milwaukee. The three brothers had kept the family's original surname, Kaczorek. Rogers learned that Joseph had changed the spelling of his surname before entering the Army and had also changed the spelling of his mother's name on his Army record.

Colonel Gleason had offered to trace the family of Charles Steiner, of Navarre, Ohio; Gleason had grown up near Navarre and still had a sister living there. Within a few hours, Velma Zimmerman, of Canton, Ohio, one of Steiner's two sisters, was on the telephone with Gleason.

By Monday, January 17, members of all but one of the families of the men on 41081 had been located. Sergeant Howard

couldn't find any relatives of Raymond J. Geis, Jr., who had been the plane's copilot. The last address that the Army had for Geis's wife and his mother was in Chicago. There were only fifteen Geises in the Chicago directory. Howard called them all, with no luck. Earlier, Howard had found Stanley Gross's widow, Carmen, whose 1944 address was also Chicago. There were about three hundred Grosses in the Chicago telephone book, but there was just one Carmen Gross. Of the nine widows of the men on 41081, Carmen Gross was the only one who had not remarried. After the crash, the Army Air Forces had encouraged the mothers and widows of the men on the missing plane to keep in touch and had sent them a list of each other's names and addresses. For a year or two, some had exchanged letters. Carmen Gross and the former Mrs. Raymond J. Geis, Jr., had stayed in touch longer than most. Maria Geis had remarried in 1949, and Carmen Gross had been a guest at her wedding. When Sergeant Howard talked to Mrs. Gross, he told her that he couldn't find any of Raymond Geis's relatives. She couldn't remember the surname of Mrs. Geis's second husband or the name of the town in Illinois to which he and Maria had moved in the 1970s.

John Rogers recalled that in 1981 the Army had spent four months trying to find the next of kin of Corporal William Wohlgemuth, whose remains had been recovered in 1980 from another Second World War plane crash in Papua New Guinea. Furue's recommendation on Wohlgemuth had been approved by a Board of Officers on July 31, 1981. Wohlgemuth's address of record was Alhambra, California, a city near Los Angeles, and the record also showed him to have been a member of the Catholic Church. Army officers looked through local records, asked civic and church organizations for assistance, and made a door-to-door search in Wohlgemuth's last-known neighborhood in an effort to trace surviving relatives. In early December, the Army released a dispatch about its fruitless search for Wohlgemuth to the Associated Press and United Press International. A friend of one of Wohlgemuth's brothers read a wire-service account in his local newspaper, and within four days the Army was in touch with the brother, who lived near San Francisco.

On Wednesday, January 19, 1983, the Army again turned to the press. A dispatch was prepared and submitted to the AP and the UPI for distribution to newspapers, radio stations, and tele-

vision stations. It recounted the story of the crash, gave the names of the twenty-two men who had been identified, said that the families of twenty-one servicemen had been notified, and asked anyone with information that could help locate the family of Second Lieutenant Raymond J. Geis, Jr., "to notify the Adjutant General's Casualty Office with a collect call to (202) 325-7960," the main number for Casualty and Memorial Affairs.

On the evening of Wednesday, January 19, 1983, Maria Ulrich was watching TV in the family room of her home, in Ingleside, Illinois, a small town 50 miles from Chicago, with her husband, her mother, and two neighbors. Shortly after 9:00 P.M., the telephone rang. It was Maria Ulrich's cousin Helen, who lived in Oak Lawn, a Chicago suburb. Cousin Helen, who suffered from arthritis, listened to the radio a great deal. She had been listening to the nine-o'clock news on WBBM, a popular Chicago radio station. After the newscaster read the wire-service story about the plane and the appeal for help in locating Geis's family, she dialed Maria's number. Maria answered the telephone.

"Do you have the radio on?" Helen asked.

"No," Mrs. Ulrich said. "I'm watching the idiot box."

"Are you sitting down?"

"No. I'm in the family room, and the phone down here is on the wall."

"Well, please do sit down," Helen said.

Maria Ulrich followed her advice.

"I don't know whether I should tell you this, but I think I'd better," Helen continued. "I've just heard on the radio that the Army has found the plane Ray was on. They've identified the twenty-two men aboard, and they've notified twenty-one families. They couldn't find you." Helen asked if she might give the newscaster Maria's telephone number. Maria consented, but when he telephoned her, wanting to interview her for the ten-o'clock news, Maria Ulrich had to decline: she was too unnerved to speak to a stranger. The neighbors were tactful and left quickly; like most of the Ulrichs' friends and relatives, they had no idea that Maria had been married to Raymond Geis on November 3, 1943, the day he graduated from Army Air Forces

pilot school and received his wings, and that she had become a widow four months later.

After the neighbors' departure, Maria Ulrich made a call—to Carmen Gross.

"Where the hell have you been?" Mrs. Gross inquired.

The two women had a fairly long conversation. Carmen Gross spoke of Sergeant Howard as a very kind man. She passed on the information he had given her about the recovery of the remains and told Maria Ulrich she had learned from Sergeant Howard that the Army would bury the remains of each of the men on the plane in accordance with his family's wishes. Mrs. Gross said she hadn't yet reached a decision about where to bury her husband. Before Maria Ulrich went to bed, still in a state of disbelief, she tried to telephone a cousin of Ray Geis's, a dentist who lived in Joliet, Illinois. There was no answer at his home.

The Ulrichs subscribed to the Chicago *Tribune*. The paper delivered to them on the morning of January 20 carried a story about Emory Young, of Macomb, Illinois. "I'd have had a heart attack if I'd seen the *Tribune* before Helen telephoned," Maria Ulrich said later. She remembered that Emory Young's mother had visited her and Raymond Geis's mother in Chicago not long after the plane's disappearance. That morning, the Ulrichs had to drive to Waukegan, Illinois, for a hearing on the property taxes on their house. The station had called the Adjutant General's Casualty Office the previous evening with Mrs. Ulrich's telephone number. When Sergeant Howard telephoned Maria Ulrich on the morning of the twentieth, her mother answered, and explained that she was out for a few hours. He called back around two o'clock that afternoon, and reached Maria Ulrich. He brought up the matter of who would serve as "primary next of kin," the relative who would assume responsibility for burial arrangements. Mrs. Ulrich told Sergeant Howard that she hadn't corresponded with Raymond Geis's mother for a while; the last she knew, Mrs. Geis was living in a trailer court in a small town in California. She said she believed she could find Mrs. Geis if she was still alive. With the help of the town's Chamber of Commerce, she reached two people at the trailer court, and learned that Mrs. Geis had become quite senile and was living in a nursing home in California. When Maria Ulrich passed this

information along to Sergeant Howard, he advised her not to disturb Mrs. Geis by telling her that her son's remains had been found, but Maria Ulrich thought that telling her was the proper thing to do. Raymond Geis had been her only child. She reached her former mother-in-law on a day when she was lucid. Mrs. Geis told Maria Ulrich she felt that Maria was the one best qualified to make any decisions that had to be made. "He belonged to you," Mrs. Geis said. Mrs. Ulrich reported the phone conversation to Sergeant Howard and also mentioned Raymond Geis's cousin in Joliet. Howard said that the cousin was a rather distant relative, and suggested that she might want to honor her former mother-in-law's wish that she serve as primary next of kin; she accepted the responsibility.

On January 21, when Maria Ulrich had just agreed to become primary next of kin and was starting to think about where to bury Raymond Geis, most of the sixteen other families that Howard, Rogers, and Gleason had traced had had between four and nine days to make these decisions; the five families that had read of the plane's recovery in May 1982 had had eight months. In twelve cases, including that of John Staseowski, the primary next of kin would be a brother. In three cases, it would be a sister: Harvey Landrum, Charles Steiner, and Robert Thompson had no brothers. In three cases, including those of Maria Ulrich and Carmen Gross, it would be a widow. And in three cases it would be a child. Nancy Barnard Linthicum, Larry Loop, and Melvin Walker were all devoted to their stepfathers but had always been interested in their real fathers, and they took the opportunity to do something for these men they had never had a chance to know. By January 21, most of the families had decided where to bury the men from 41081; the others would make their decisions soon. Twelve were to be buried in family plots in private cemeteries—often alongside the graves of their parents. Three were to be buried in the military sections of private cemeteries; either their families had no plots in these cemeteries or the plots had been filled. The private cemetery in Massachusetts where John Staseowski's father was buried had lost the location of his grave, and donated a plot; John Staseowski would be buried near the graves of his mother and

stepfather. Six other men, among them Raymond Geis, would be buried in military or national cemeteries. Maria Ulrich's husband, Chris, had served in the Army at Fort Sheridan, Illinois. He drove her there on a sunny day to show her the post cemetery. She liked its tranquility and the view of Lake Michigan. She described the cemetery to Carmen Gross, who decided that she would bury Stanley Gross in an adjacent grave. Both women seemed to feel that since the two men had lain together for thirty-eight years on Mt. Thumb it would be fitting for them to lie together for the rest of time.

It was not easy for Nancy Linthicum to decide where to bury her father. One possibility was the Barnard family plot in Wadsworth; she ruled that out, because only her two cousins lived there, and Ohio was a long way from Missouri. Her uncle, Amos Barnard, proposed Arlington National Cemetery, but that was even farther away. Nancy Linthicum had learned from John Rogers and Doug Howard that the Army would pay as much as $1400 if she chose to have her father buried in a private cemetery. If burial was to be in a national cemetery, like Arlington, virtually all costs would be taken care of by the Army and $75 would be allotted for such items as death notices and flowers. Whatever cemetery Nancy Linthicum chose, the Army would not pay for her transportation to or from it, or for the transportation of her two sons. For that reason and for another, more compelling one, she eventually chose to have her father buried in Kansas City, Missouri, in a pretty cemetery near her office and her home. She wanted to be able to visit her father's grave regularly, and that would be possible only if he was buried in Missouri.

While Rogers and Sergeant Howard were calling the relatives of the men on 41081, another branch of Casualty and Memorial Affairs was procuring a Survivor Assistance Officer for each primary next of kin. SAOs must be the same rank as the deceased or higher, and must be active-duty members of the Army. They are chosen from places as near as possible to the homes of the next of kin. A number of the SAOs selected were men who taught military science to ROTC students at universities (Nancy Linthicum's SAO taught at Central Missouri State

University; Velma Zimmerman's was a professor at the University of Akron) or men assigned to Army Recruiting Commands, although Carmen Gross's, a woman, was a captain assigned to the Alcohol and Drug Control Office at Fort Sheridan. On January 21, 1983, the day after the board met, Colonel Flick sent each SAO a letter with enclosures and instructions. One enclosure was the CIL's paperwork pertaining to the serviceman in question, along with "four disposition options for remains of World War II casualties." Colonel Flick's first instruction to the SAO was "Familiarize yourself with the enclosures," and the second was to please call John Rogers or John F. Manning, another identification specialist with Casualty and Memorial Affairs, before getting in touch with the family. Most of the men and women SAOs had never served in that capacity before. They were given advice by Rogers and Manning on how to telephone the families, and had access to Department of the Army Pamphlet 608-33, a "Casualty Assistance Handbook," which spelled out how "Initial Contact with NOK (Telephonic)" was to be made:

> In your call, identify yourself and the fact that you will be assisting. Do not say that you have been "appointed" or give an impression that assisting is a chore of inconvenience to you. BE SINCERE IN YOUR OFFER TO HELP. Extend your own sympathy and condolence. Tactfully explain there are, or shortly will be, a number of matters which will require the NOK's personal attention and decision. Ask to meet with the NOK as soon as possible, in the home or at a place the NOK designates. The first telephone contact is crucial. Your courtesy, sincerity, honesty, understanding of the situation, and ability to answer questions will help to establish the needed rapport between you and the NOK. If you don't "make the grade" here, you will find it hard to succeed later.

Pam 608-33 (there is little that the Army hesitates to abbreviate) goes on to address "First Visit with NOK" in another paragraph:

> The first visit with the NOK may be difficult for you. However, try to appear poised and self-assured. The NOK will rely on you for strength and expect to find you fully competent. Be sure that your uniform is proper, clean, and neatly pressed whenever you meet with the NOK. Keep your relationship with the NOK on a professional level at all times. Never become personally involved, seek favors, borrow money, etc. As a representative of the Secretary of the Army, you must be the epitome of a professional soldier in conduct and appearance.

Despite their lack of experience, the sincere, neatly pressed, professional men and women "made the grade" with the relatives. Over the telephone, they had informed them of the CIL documentation they would be bringing on their first visits. When SAOs perceived that relatives were still wrought up over the unanticipated recovery of the remains, they warned them gently that the skeletal diagram and photograph were a bit graphic, and proposed that they put the paperwork aside for a while. Most of the relatives studied the paperwork, including the diagram and photograph, but not all of the children and brothers serving as primary next of kin shared them with the men's mothers. Nancy Linthicum was pleased that her father's remains had been found together in one place. The family of William Shrake was impressed by the quantity of remains found and the excellent dental comparison. When Shrake's mother saw the photograph of the deformed ulna, she remembered exactly when he incurred the injury, playing basketball. A number of relatives didn't understand Form 892 or Form 897. Some had never heard of humeri and tibiae, much less the significance of measuring them. A fair number of relatives accepted the identifications simply because their son, brother, or father was on the manifest of 41081, the plane had been found, his remains had been identified by the Army, as had the remains of all the other men on the plane, and none of the twenty-two had ever turned up elsewhere.

In mid-January, the remains of twenty-one of the twenty-two men on 41081, having been put in aluminum transfer cases, were driven from the CIL to Hickam Air Force Base, flown to Travis Air Force Base, California, and driven to the United States Army Mortuary in Oakland, which is the port of entry for remains from Asia. In Oakland, each remains was wrapped in a blanket, laid out in a metal casket, and covered with a uniform.

Flick's final instruction to every SAO in his letter of January 21 was to send a telegram to the Directorate of Casualty and Memorial Affairs after the family member he or she was assisting had chosen a funeral home or government cemetery and a date for burial. Casualty and Memorial Affairs would transmit this information to Oakland. Each remains would be flown to the airport nearest the cemetery of choice, accompanied by an escort officer from the Oakland area.

The first telegram was dispatched on January 24. By February 12, eighteen funerals had been held. Once most of the relatives had got over their initial shock and had made their decisions, they wanted to give the men the burials they had never received.

In late February, as the remains of two of the men were about to be flown from California to the Midwest for burial—one in Illinois, the other in Kansas—a couple named Juanita and Alvin Beck were setting off in the opposite direction. They flew from their home in Des Moines, Iowa, to Los Angeles, changed planes, and continued to Honolulu. The Becks were going to attend the funeral of the one man whose remains had stayed in Hawaii, because his family had chosen to have him buried there—at Punchbowl, the National Memorial Cemetery of the Pacific. The man was Mrs. Beck's first husband, Lieutenant Robert E. Allred, the pilot of 41081.

My Grandfather's Last Tale

by LAWRENCE WESCHLER

The mission? To carry forward the musical legacy of a once-celebrated composer, as part of the duties of a musically ungifted oldest grandson. The stops along the way? The modernist frenzy of 1920s Vienna and Berlin and the artistic lassitude of 1940s and 1950s expatriate Hollywood. The culmination? The stage of an adventurous opera company in a little town in eastern Germany that was by turns an SS and a Stasi stronghold

SCHEHERAZADE had had enough—or so the story goes. She'd told a thousand tales and had no more to tell. Her sister tried to rally the poor girl: didn't she realize that unless she took up the skein once again that night, not only would the Sultan order her killed on the spot but he'd resume the homicidal binge her tales had so tenuously forestalled, killing yet another maiden each and every night thereafter? Scheherazade, utterly drained, couldn't bring herself to care. For a thousand nights she'd been unspooling her improvisational yarns, anxiously awaiting the promised return of her young lover, Alcazar, who a thousand days earlier had retreated into the backcountry to organize a revolution and her liberation. But by now it was surely clear that he wasn't coming—and, hopeless, she was all told out.

At that very moment Alcazar came bounding over the balcony ledge and rushed to enfold his lover in a passionate embrace. Just one more night, he urged her: if she could keep the Sultan distracted for just one more night, he and his men would launch their insurrection that very eve. But couldn't he see? Couldn't he understand? she pleaded in reply. She simply had no more tales to tell. Think of something! he called as he vaulted back over the balcony ledge. And he was gone.

Disconsolate, Scheherazade lapsed into a deep late-afternoon drowse. All her tales seemed to rise up about her, as if in a pell-mell debauch: Aladdin and Sinbad, Ali Baba and the forty thieves, greedy caliphs and crafty viziers, flying carpets and slicing daggers, soaring falcons and chess-playing apes . . .

And already it was nightfall. With a boisterous fanfare the Sultan and his courtiers came barging into Scheherazade's quarters, avid for tales, and yanked the maiden from her storm-tossed dreams. Why, the Sultan boasted, his girl's stories were so enthralling that time and again he'd imagined himself *right there*—in the very thick of the action, shoulder to shoulder with her myriad protagonists. So, Scheherazade, what was it going to be tonight?

For the longest time it seemed that the answer would be

nothing. Shaking, silent, Scheherazade strained for inspiration. None came. The Sultan's concern gave way to anger and presently to scalding rage. Still nothing.

Finally, at the end of her tether, Scheherazade burst forth into narrative—her own: the tale of a young girl, hopelessly ensnared, desperately longing for deliverance by a long-lost love. In the distance explosions could be heard, and flames licked the horizon, but seamlessly Scheherazade wove even these into her tale. Messengers came charging into the palace, urgent with bulletins: The Sultan, transfixed, brushed them away: nothing short of miraculous, the way this girl could spin such lifelike tales!

On and on Scheherazade unfurled the story of her own liberation. So rapt had the Sultan become that even as Alcazar and his troops stormed into the royal chambers, even as they clamped the despot in heavy iron coils and dragged him away, delirious, he still seemed to half-believe that he was in the midst of an indescribably marvelous tale.

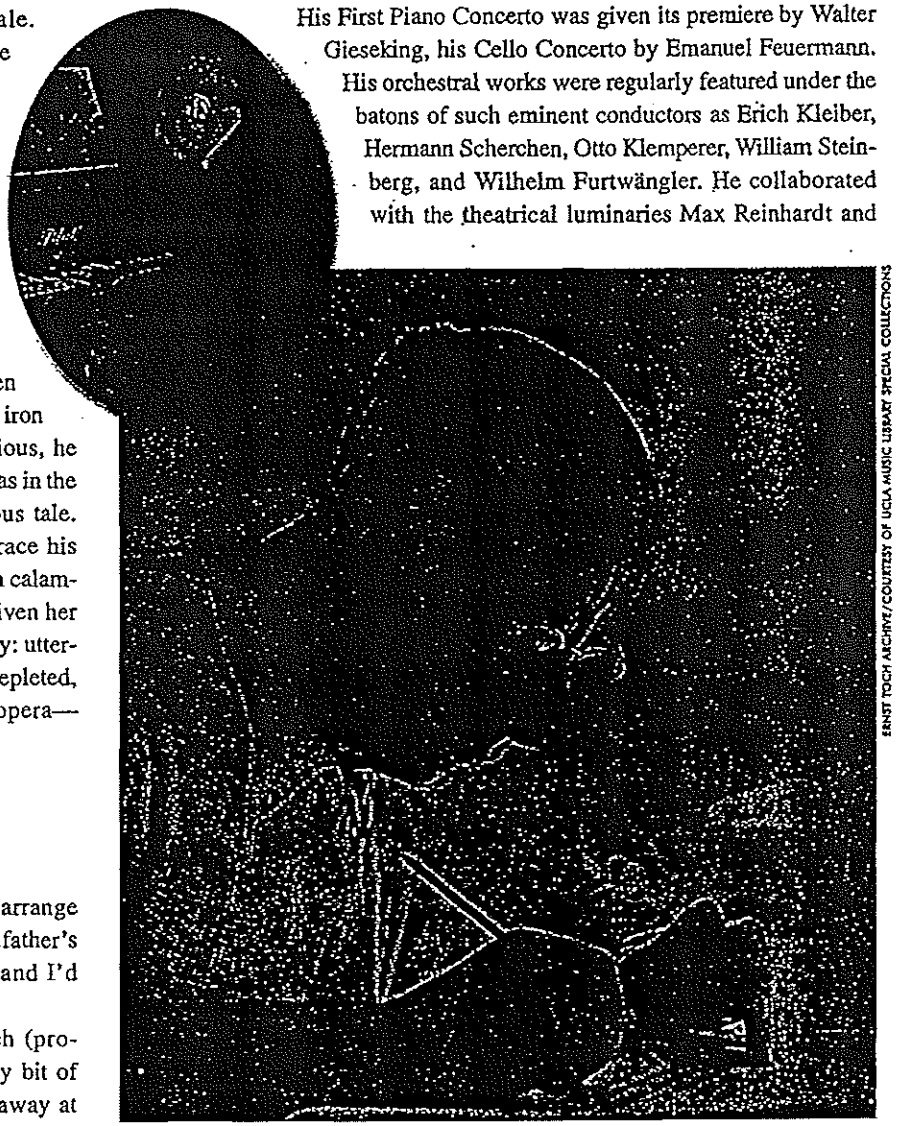
Alcazar rushed forward to embrace his consort once again, in triumph but in calamity as well. Scheherazade, having given her all, had indeed told one tale too many: utterly spent, she collapsed, pale and depleted, into his arms, and—opera being opera—proceeded to die.

Stoking and Stumbling

FOR years I'd been trying to arrange a premiere for my late grandfather's final opera, *The Last Tale*, and I'd pretty much given up hope.

My grandfather was Ernst Toch (pronounced *Talk*, with a husky-breathy bit of Middle European business tucked away at the very end), and though his is hardly a name to conjure with nowadays, there was a time—oh, there was a time. In Santa Monica, where he spent much of the latter half of his creative life, the émigrés used to regale one another with a story about two dachshunds who meet one evening out on the Palisade. "Here it's true," one assures the other, "I'm a dachshund. But in the old country I was a Saint Bernard."

Back in the old country my grandfather *was* a Saint Bernard—in Weimar Berlin, that is, during the mid and late twenties and on into the early thirties. Born in 1887, and thus wedged, generationally speaking, between, say, Arnold Schoenberg (b. 1874) and Paul Hindemith (b. 1895), Toch was at the forefront of the modernist Neue Musik revolution that swept Middle Europe in the aftermath of the First World War. His chamber opera *The Princess and the Pea* received its first performance at the Baden Baden Festival in 1927, right alongside Hindemith's *Hin und Zurück*, Kurt Weill's *Mahagonny*, and Darius Milhaud's *L'Enlèvement d'Europe*. His First Piano Concerto was given its premiere by Walter Gieseking, his Cello Concerto by Emanuel Feuermann. His orchestral works were regularly featured under the batons of such eminent conductors as Erich Kleiber, Hermann Scherchen, Otto Klemperer, William Steinberg, and Wilhelm Furtwängler. He collaborated with the theatrical luminaries Max Reinhardt and



ERNST TOCH ARCHIVE/COURTESY OF UCLA MUSIC LIBRARY SPECIAL COLLECTIONS

Top: A young Ernst Toch composes at the piano; above, Toch in 1960

Berthold Viertel, and with the novelist Alfred Döblin (of *Berlin Alexanderplatz* fame) and the satiric poet Christian Morgenstern. In short, he was at the very center of a vast, energized, and energizing echo chamber—one that was soon to come crashing all about him, and so many countless others, with Adolf Hitler's rise to power, in January of 1933. It was Toch's most recent opera, *The Fan*, that William Steinberg was rehearsing in Cologne when Nazi brownshirts came storming into the hall and literally lifted the baton out

of his hand. Not long after that the once-respected German musical monthly *Die Musik* came out with a special anti-Semitic issue featuring portraits and photos of my grandfather alongside the likes of Mendelssohn, Offenbach, Mahler, Schoenberg, and Weill—their features retouched so as to make their faces appear vaguely sinister, their noses exaggerated, the pupils of their eyes dilated, the entire cavalcade of images framed by dire quotations, in bold Gothic type, from the long-dead German composer Felix Draeseke ("Our sole salvation lies in anti-Semitism") and from the Führer himself ("The Jew possesses no culture-building power whatsoever").

However fortunate in securing refuge in America, Toch was never to recover that lost sense of cultural resonance and buoyancy—not that his reputation exactly amounted to chopped liver in his newfound home, his own late-life estimation of himself as "the world's most forgotten composer" notwithstanding. During his first decade in California his film scores were thrice nominated for Academy Awards. His Third Symphony won the Pulitzer Prize in 1956. But when, in the last years of his life, he composed his Scheherazade opera—a work he grew to consider the summary achievement of his career, and one that would prove to be among his own last tales—no opera company was waiting eagerly in the wings to produce it, as there had always been in Berlin. It remained unproduced at his death, in 1964.

In the next years his widow, Alice (more commonly known as Lilly), alongside her other efforts at stoking the flame of his musical legacy, ceaselessly endeavored to get the opera produced. As I entered my late teen years (I was twelve when my grandfather died), she recruited me in those efforts. When she died, at age eighty, in 1972, her role as executor of the Toch estate fell to me.

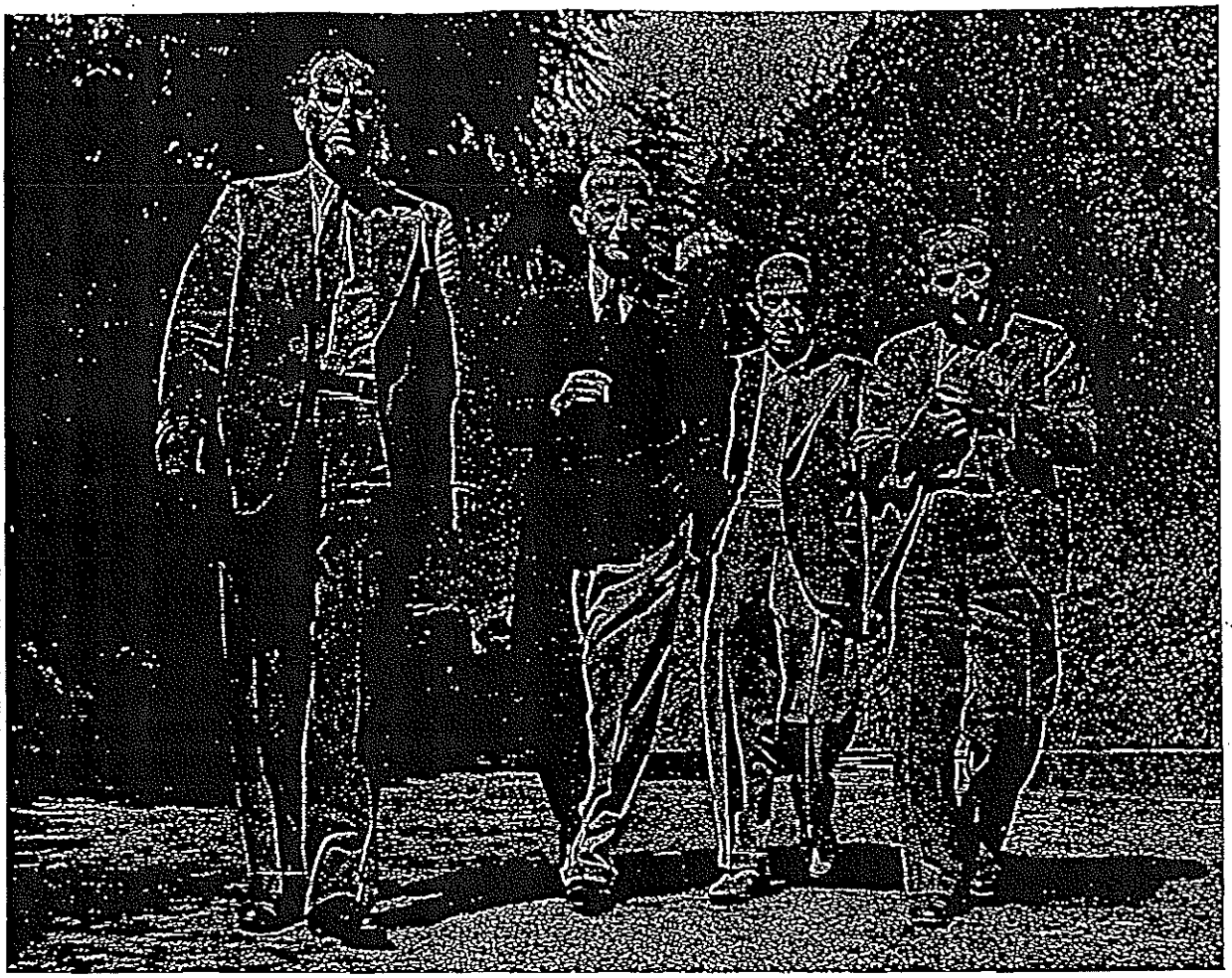
It was a role to which I was in many ways singularly ill suited. If Toch was a dachshund who'd been a Saint Bernard in the old country, he was also, musically speaking, a Saint Bernard who had arisen from a family of dachshunds. Most composers come from families that are in some way already deeply musical. Not Toch: there were no particular musical propensities in any of his antecedents, and there have been virtually none in any of his descendants either. This is particularly dismaying in my case, because not only was my mother's father this singularly accomplished composer but my father's mother, in the years before the Nazi Anschluss, was the celebrated head of the piano department at the Vienna Conservatory of Music.

None of this seemed to do me any good: the genes must have canceled each other out. For years, along with my younger brother, I labored away at piano lessons, and my grandfather even composed occasional pedagogical exercises to ease us on our way. About three or four years into the process—I must have been about nine at the time—my brother and I mounted a full-court press on a medley of those works, and were brought before the old man to display the results. I did my best to impress him, and he did his best to be encouraging. But after we left, or so I was told years later, he turned to my grandmother and said, "With the younger one, maybe, there's a chance." (Indeed, with time my brother was able to attain a certain amateur proficiency.) "But with the older one—it's amazing; I've never seen anything like it—it's absolutely hopeless." Shortly thereafter, and quite mysteriously to me at the time, though I wasn't about to ask any questions, the pressure to persevere with those dread piano lessons suddenly subsided. I quit, and that was it for any formal musical training in my life.

Nor did I have any particularly vivid memories of Toch himself. As I began making contact with conductors, performers, and academics in my various halting campaigns to propagate his work, I was surprised to find how well known he remained to many of them. He was repeatedly described to me as a "musician's musician"—a master craftsman many of whose most sublime achievements were principally recognized by other musicians. One would hardly have described him, though, as a "grandson's grandfather"—or at least an utterly assimilated, all-American grandson's idea of a grandfather. In fairness, his last twelve years (my first twelve) were a time of feverish productivity on his part, culminating in two years of labor on that opera. At any rate, he had precious little time for us grandchildren (there were four of us, the offspring of his and Lilly's only child, our mother, Franzi). He was seldom around. In retrospect I realize that it wasn't just that he always happened to be away—at Yaddo, at the Huntington Hartford Foundation, or at the MacDowell Colony; in rented lodgings in Vienna, or Zurich, or above Montreux. What he was specifically away *from* was *us*—or, rather, all the mundane, quotidian, frivolous responsibilities, and maybe even temptations, we represented.

When he was in town, ensconced in the Santa Monica home Lilly had had designed and built for him on the far slope of the Franklin Street hill, with its magnificent view of the eucalyptus-girdled Brentwood Country Club golf course and the Santa Monica Mountains in the distance, a languorous, Da Vinci–like backdrop, our visits were relatively infrequent and invariably quite formal. In particular, extreme quiet was rigorously enforced—quite an ordeal for four children. *Couldn't we see?* The closed draperies behind the bay window of my grandfather's studio would be pointed to, self-evidently: Ernst was *working!*

On those occasions when he did emerge, he was a sweet and even playful, though somewhat distracted, presence. He was inordinately fond of monkeys and could do marvelous simian turns. He loved clowns and clowning and anything associated with the circus (he had even composed a raucous *Circus Overture*, André Kostelanetz's recording of which he would occasionally play for us). But he wasn't any good at the only thing that really mattered to me in those days, which



RIGHT: ERNST TOCH ARCHIVE/COURTESY OF UCLA MUSIC LIBRARY SPECIAL COLLECTIONS; BELOW: COURTESY OF THE AUTHOR

Otto Klemperer, Prince Hubertus zu Löwenstein, Arnold Schoenberg, Toch, 1937; Toch and the author, 1952

was the Dodgers. He had never even heard of Sandy Koufax, a circumstance that left me almost speechless with stupefaction. And speaking of speechlessness, we could never take him to a restaurant or on any other social outing, because, it was explained to us in reverently hushed tones, he was afflicted with perfect pitch and such sensitive ears that any conversation registered as music. The inevitable racket of intercutting conversations at a restaurant registered as very, very bad music—an actual torture. We were urged to understand.

So I can't really say I got to know him well. Such knowledge as I do have came flooding in during the last few years of my grandmother Lilly's life, as she labored to fill me with an awareness of the particulars of her husband's life and music and the relentless requirements of the music's propagation. My mother clearly wasn't going to take up the task: widowed by my father's death in a car accident when I, the oldest, was only ten, she obviously had her hands full raising four children. Beyond that, as the late-arriving only child of a couple whose "only *real* child" (as she often put it) had been her father's music, she was always going to have a conflicted relationship to the task at hand.

So I was the chosen one, and during the last two years of my grandmother's life I spent long weekends and vacation weeks at her side, rifling through boxes teeming with scores, manuscripts, tapes, LPs, contracts, and professional and personal correspondence, ordering a lifetime's profusion for eventual transfer to the archive she established at the University of California at Los Angeles and helping her to prepare for the year-long oral-history project to which she had, in conjunction, committed herself.

Scheherazadelike, she kept herself alive that entire last year slogging through those boxes and completing almost thirty taping sessions (which eventually yielded nearly a thousand pages of transcript), telling the tale of this

composer husband to whose needs she had subsumed her own life almost completely.

Within a few weeks of the last session Lilly died—or maybe, her duty done, she finally allowed herself to die. The people at the UCLA oral-history program asked if I would check and edit the transcript myself, since by then I was probably the person most familiar with its contents and especially with Lilly's high-Viennese accent. I took six months off from college and threw myself into the project. At times I felt a little like Hart Crane in that wonderful early poem of his about coming upon an attic cache of his grandmother's love letters. Like him, I'd ask myself,

"Are your fingers long enough to play
Old keys that are but echoes:
Is this silence strong enough
To carry back the music to its source
And back to you again
As though to her?"

Yet I would lead my grandmother by the hand
Through much of what she would not understand;
And so I stumble.

I did a lot of stumbling. At times my grandmother seemed to be trying to take me by the hand through much of what I literally could not understand. In one taped passage she was getting set to relate the name of the specific site on the Italo-Austrian front where Ernst had spent a particularly dreadful but crucial period in the trenches during the First World War. Since she was the only one left who remembered the name of the place, she made sure to slow down and enunciate the name with extraordinary precision, as if for all posterity. The place, she pronounced ever so distinctly, was "Hot Potato Shit." I must have replayed that bit of tape a hundred times, speeding it up, slowing it down, splitting it off onto different channels. (I dream about it to this day: Hot Potato Shit.) I must have spent twenty hours in the research library poring over ancient, yellowing gazetteers. Haupt Tatra Spitz? Hohe Tauern Spitz? I didn't, and I still don't, have a clue.

Nor, in the end, did I have much of a clue about how to promote my grandfather's music, as is evidenced by the fact that you, dear reader, most likely still haven't heard much, if any, of it. In the first few years I replicated Lilly's methods—the excruciating post-concert backstage sieges of visiting conductors and chamber groups, the endless carping at far-flung publishers and courtship of radio programmers and recording czars. I was not entirely without success. I managed to get Toch's 1948 treatise, *The Shaping Forces in Music: An Inquiry Into the Nature of Harmony, Melody, Counterpoint and Form*, reissued in paperback. By way of a preface I included the English translation of a contemporary letter by Thomas Mann, who praised the volume as "beyond any question . . . the most amiable book of instruction and perception in the field of music that has ever come to my knowledge—lucid, clever, . . . cheerful and comforting; endowed with a liberality that dispels superstition and false pomp; broadminded, benevolently progressive, yes, optimistic. . . ." I helped to midwife a few recordings, and during the centennial of Toch's birth, in 1987, I was able to secure a smattering of performances and radio specials. I did what I could to keep the music in print and the archive in good order.

IF TOCH WAS A DACHSHUND WHO'D BEEN A SAINT BERNARD IN THE OLD COUNTRY, HE WAS ALSO, MUSICALLY SPEAKING, A SAINT BERNARD WHO HAD ARISEN FROM A FAMILY OF DACHSHUNDS.

But gradually I resolved to let my grandfather's work fend for itself, confident that in the fullness of time it would find its own level; for the most part I got on with my own life and career as a writer. In this context I might relate something I've often found odd and even a bit unnerving. Although I have no musical aptitude per se, whenever I write, or review my own or other people's writing, almost all my judgments about the process tend to get framed in musical metaphors: questions of pacing, modulation, tone, harmonics, counterpoint. I'll sense that a given passage is out of key, or could use a little more syncopation, or needs to shift from the dominant to the subdominant—and I don't even know exactly what any of those terms mean. I have a profound sense that I am engaged in a compositional enterprise involving the sequential deployment of material across time in a "formful" manner, which is to say within a transparent architectonic (one of my grandfather's favorite words) structure. When teaching writing classes I often assign my grandfather's book. Though I can't fathom a single one of its nearly 400 musical examples, I understand exactly what he was talking about on every page, and subscribe to virtually all of it, feeling I couldn't have parsed the matter better myself. When I'm alone, typing at my keyboard, I often hear music in my head, especially as my pieces approach their climaxes; almost invariably the music in question (when I stop to think about it) turns out to be my grandfather's. In fact, passages of my own turn out, in pacing and melody and

formal structure, to be virtual transcriptions of passages from his quartets or symphonies. It can get to be a little spooky.

Anyway, as I say, I got on with my career and resolved to let my grandfather's music proceed on its own. But there was this one painful exception to the rule: his last opera, whose ongoing lack of performance continued to taunt me. Over the years I did what I could. There were various close approaches and one excruciating near-miss, with Seattle's vigorous young opera company. I tried to limit my advances to major opera companies, since such an important work, it seemed to me, deserved a significant debut. But the work itself presented problems, or so I was repeatedly told: the soprano lead was fiendishly demanding, for one, and the length of the piece was awkward (ninety minutes in a single act). Nearly a third of a century after its composition I was beginning to lose hope.

But then one morning early last year I awoke to find that a single-page note had come spewing out of my fax machine the previous night: a letter from the Deutsch-Sorbisches Volkstheater, in Bautzen, Germany, informing me (not asking my permission or anything, simply informing me) that they were planning to present the opera that coming November and going on to say that although they were somewhat strapped financially, and hence unable to pay for my flight, they would be happy to put me up in a local hotel for a few nights if I could somehow make my own way to Bautzen. The letter concluded by inquiring whether, on that basis, I'd be interested in coming.

Perplexed, I consulted my household atlas. Bautzen turned out to be a small provincial center in the eastern corner of the former East Germany, just north of the Czech border and about thirty miles outside Dresden in the direction of Poland. Its name was also given, in parentheses, as Budysin, and looking again at the fax's letterhead, I saw that the theater was listed also as the Nemsko-Serbske Ludowe Dziwadlo Budysin.

My initial reaction was, well, mixed. I was thrilled that the opera would at last be performed. But in Bautzen—who'd ever heard of Bautzen? And, more to the point, by the *German-Serbian* Folk Theater?

This did not sound altogether good for the Jews.

"I Have My Pencil"

LILLY Zwack and Ernst Toch were both born in Vienna, though in very different Viennas. Lilly's father was a banker, and she was thus a princess of the highly assimilated Jewish aristocracy—a class whose idolatry of things German and corresponding disdain for things Jewish (specifically Eastern European Jewish) could verge on the anti-Semitic. Ernst's parents were more conventionally Jewish. His father was a processed-leather dealer whose family had attained relative financial security only with his generation. The father naturally assumed that Ernst, his only son, would take up the family business, and was quite discomfited to see him inexplicably tending toward music instead. He did everything possible to discourage the tendency, and indeed almost all of Ernst's musical education had to take place in secret.

Ernst appears to have been some kind of prodigy when it came to the universe of sounds, and Vienna being Vienna, it was perhaps only natural that such an aptitude inexorably turned toward music. The brief tenancy of an amateur violinist in the Toch household afforded the boy his first exposure to sheet music: within a few nights of rapt attention he had figured out virtually all the fundamentals of musical notation.

A few years later, when still only age ten, Ernst made the "decisive discovery," as he later put it, of pocket scores—specifically, miniature editions of ten Mozart string quartets, which he happened to notice propped up in a music-shop window. He hoarded his pfennigs and bought one of the booklets, smuggling it home and studying it late at night under the bedcovers. "I was carried away when reading this score," he wrote much later. "Perhaps in order to prolong my exaltation, I started to copy it, which gave me deeper insight." Soon he managed to buy all ten of the scores. After having copied three or four of them, he began to make out the structure of the individual movements. When he started to copy the fifth, he decided to stop at the repeat sign and try his hand at improvising the development. He compared his efforts with the original. "I felt crushed," he later recalled. "Was I a flea, a mouse, a little nothing . . . but still I did not give up and continued my strange method to grope along in this way and to force Mozart to correct me."

He would never receive any formal compositional training. Though supplemented as an instructor by Bach and the other masters of the high tradition, Mozart remained the reigning god in Ernst's pantheon. "If Mozart was possible," he would sometimes declare, "then the word impossible should be eliminated from our vocabulary." Whenever he encountered anyone complaining about Mozart's dying so young, he'd erupt, "For God's sake, what more did you want from the man?"

By his middle teens Ernst was already composing quartets of his own; he completed six by the age of seventeen. A schoolmate borrowed the last of these and managed to show it to Arnold Rosé, the first violinist of the eminent Rosé Quartet. A few weeks later Ernst received a postcard notifying him that the piece had been accepted for performance—his first.

And yet, for all this early success, he never imagined that he would be able to convert his beloved hobby into any sort of vocation. In 1909 he was well on his way toward a medical degree at the University of Vienna when, seemingly out of nowhere, he received word that he'd won the Mozart Prize—the coveted award of a quadrennial international competition for young composers, which he had entered three years earlier on a lark. The prize came with a stipend for study at the Frankfurt Conservatory. He was elated that at last he'd be getting some formal training. Instead, when he arrived, as he later recalled, the head of the conservatory's

composition department, Iwan Knorr, insisted on studying with him. Indeed, the new quartet (op. 18) and other works Toch produced in quick succession showed that he had already attained full maturity as an heir to the late-Romantic tradition of Brahms.

Following his time at Frankfurt, he was appointed professor of composition at the nearby Mannheim Hochschule für Musik. During return visits to Vienna in the ensuing years his courtship of Lilly began—a courtship that took on added urgency with the onset of the war and his drafting into the Austrian army. Over the next five years he fell largely silent, with the exception of an idyllic serenade for string trio composed, improbably, in those mud-choked trenches at Hot Potato Shit. Working frantically behind the scenes, Lilly eventually managed to secure him a cultural deferment (ah, the exquisite exigencies of the late lamented Hapsburg Empire!), and he was pulled back behind the lines to Galicia for the latter half of the war. Within a week of that pullback virtually the entire squadron with which he'd been stationed was wiped out in a gas attack.

When the war ended, the couple, now married, settled in Germany. As Toch's creative energies resurfaced, it became clear that his five years of silence had veiled a profound inner transformation. His next string quartet (op. 26) scandalized the audience at its Mannheim premiere, in 1919. "The musical revolution did not come about suddenly," he wrote years later, summarizing the dynamics behind the Neue Musik upsurge in which he played so vivid a role. "Gradually, composers began to feel that the old idiom of tonality had exhausted itself and was incapable of utterance without repeating itself, that the once live and effective tensions of its harmonic scope were worn out and had lost their effect. . . . Indeed, [breaking free of that tonality] was refreshing, even an inner need, . . . as refreshing as a plunge into cold water on a tropical summer day."

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Toch, the Austrian army conscript, with his fiancée, Lilly, during the First World War

By 1923 Toch had secured a ten-year contract, complete with a generous monthly stipend, from one of Germany's most prestigious music publishers, B. Schott's Söhne. He showed an increasing predilection for experimentation. For instance, he composed a suite for mechanical player piano that allowed intricate chords of well more than ten notes. And he forged an entirely new genre with his Geographical Fugue for Spoken Chorus, a rigorously patterned sequence of place names ("Trinidad, and the big Mississippi and the town Honolulu and the lake Titicaca / The Popocatepetl is not in Canada rather in Mexico Mexico Mexico") splayed into a strict fugal canon and intended to be spoken, rather than sung, by a traditional four-part chorus: Weimar Rap. Given its premiere at a 1930 music festival in Berlin as a trifle, a sort of musical joke, it was ironically to become perhaps Toch's most famous and influential piece. A young American in the audience, John Cage, was particularly captivated, or so he told me years later, when I met him while researching an article about his and Ernst's dear friend the musical lexicographer Nicolas Slonimsky. "Ah, yes," Cage said, that marvelously sly twinkle in his eye. "Toch—boy, was he onto some good stuff back there in Berlin. And then he went and squandered it all on more string quartets!" Years later, in 1962, Toch revived the genre in his "Valse," arranging the clichés of typical American cocktail-party banter into 3/4 time—taming all that nerve-wracking chatter, that is, into a more rigorous and endurable sort of noise ("My, how super-dooper / Hold your tongue, you strapper / Let's behave, not like babies, but grown-ups / She is right / She is right!").

Another of Toch's musical divertissements from that bountiful period was a chamber opera composed, as it happens, a third of a century before *The Last Tale* and in many ways its obverse. Based on a charmingly mischievous libretto by Christian Morgenstern, *Egon und Emilie* begins as a dapper contemporary couple enters stage center and the woman energetically begins regaling everyone with how great it is to be singing like this and embarking on an opera. She waits expectantly for her consort's riposte—which doesn't come. Demurely seated, he says nothing. She tries to rouse him again and yet again: nothing. The more frantically she endeavors to provoke him, the more agitated the accompanying music becomes—and still nothing. Finally she flees the stage entirely, a broken woman. Whereupon, twenty minutes into the piece, the man gets up, clears his throat, and announces, in a level if somewhat disdainful voice, that he for one can't stand opera, it's all so completely artificial, and he has no intention of indulging such nonsense any further. Curtain falls: end of opera, end of evening.

As daft as that opera may have seemed at its Berlin premiere in 1928, with the passing months it began to take on a prophetic aura. For there were others, too, who had no intention of indulging this nonsense—this marvelous cosmopolitan capital city with its four year-round top-notch orchestras, its three full-time opera houses, and its dozens upon dozens of theaters, all trafficking in the latest idioms—any further.

Upon Hitler's rise to power Toch took the measure of the new reality almost immediately, much to Lilly's surprise—he'd always seemed so apolitical. It was time to go. For purposes of escape he took advantage of having long before been selected (along with Richard Strauss) to represent Germany at a musicological convention in Florence in April of 1933. He never returned to Berlin, instead fleeing to France. After he had established himself in a Paris hotel, he let Lilly, back in Berlin, know that the coast was clear for her and their five-year-old daughter to join him by way of a coded telegraphic message that read simply, "I have my pencil."

He had little else. His publisher had abandoned him. His music was being burned, and the plates broken. Concerts of his work were canceled. The only traces remaining of his once vibrant reputation were doctored photographs in exhibitions of "degenerate music."

It would be several years before he even found a new home. With Paris thronged by refugees, the family moved to London, where Toch managed to secure some film work at the behest of his old Berlin collaborator the director Berthold Viertel. (The scenarist of the film in question, *Little Friend*, was Christopher Isherwood, who later described his own experience of the project in his novel *Prater Violet*.) Within a year Toch was invited by Alvin Johnson, of the New School for Social Research, in New York, to be among the first to join the faculty of Johnson's celebrated University in Exile.

Once in New York, Toch endeavored to repair the shattered music-publishing part of his career by joining up with Schott's longtime American partners, a company called Associated Music Publishers (AMP), which, itself unaffected by Hitler's rise, was only too happy to have him. Because his former performance-royalties collection agency, the German firm GEMA, had expelled him, however, along with all its other Jews, he had no way of collecting royalties from performances of any of his works anywhere in the world. For this reason, AMP urged him to join GEMA's principal American counterpart, the American Society of Composers, Authors, and Publishers (ASCAP). Though there were some technical obstacles to his doing so, these were quickly smoothed over by the intercession of a new friend, George Gershwin. Gershwin had originally approached Toch, as he did several other émigrés—Stravinsky famously among them—in an attempt to get some formal compositional training. Gershwin had become obsessed with the notion of composing a conventional string quartet. Much to his frustration, however, neither Toch nor any of the other émigrés was willing to tamper with such evident native genius.

The trouble came a few months later, when AMP was bought out by ASCAP's chief rival, BMI, and the new management summarily decreed that it would no longer publish or promote the work of Toch or any other ASCAP composer. Several decades later BMI's ownership of AMP (or any oth-

er publisher) was suspended owing in part to antitrust allegations, but in the meantime its impact on Toch's career proved devastating. He was now forced into a second sort of exile, his works scattered among an ill assortment of publishers, none of which was ever to show much interest in promoting its own small share.

Echolessness

MORE problematic yet, for Toch and many of the others, was what his colleague Ernst Křenek referred to as "the echolessness of the vast American expanses." From a world of continuous, almost febrile anticipation, in which their ongoing work had been charged with pressing significance (audiences would not only experience the work almost as soon as it had been written but also spend hours and hours arguing about it), Toch and the others had moved into a cultural scene characterized at best by its "unlimited indifference and passive benevolence toward anything and anybody," in the words of the conductor Henri Temianka, who was referring specifically to the ethos of southern California. At worst—and, unfortunately, this worst was generally the rule—modernist émigré work met with almost allergic hostility.

From the start, from even before the start, Toch had tried to meet this reaction head on. In 1932 he had toured the United States as a guest of the Pro Musica Society, playing piano and lecturing at chamber recitals. At a news conference prior to one such concert he exhorted his interlocutors to open themselves to new sounds. He warned them of the consequences of trying to force those sounds into such preexisting mental compartments as classical, Baroque, or Romantic. "In such a case," he explained, "either the music remains outside of you or else you force it with all of your might into one of those compartments, although it does not fit, and that hurts you, and you blame the music. But in reality it is you who are to blame, because you force it into a compartment into which it does not fit, instead of calmly, passively, quietly, and without opposition helping the music to build a new compartment for itself." The assembled reporters absorbed this lesson impassively and then posed a few mundane questions, such as what was the composer's favorite food, to which Toch replied, "Steak tartare." The next morning's paper predictably featured a large photo of Toch at the keyboard under the headline "EATS RAW MEAT."

In 1935, again partly thanks to one of Gershwin's interventions, Paramount commissioned Toch to score its new Gary Cooper–Ann Harding vehicle, *Peter Ibbetson*, which won Toch his first Oscar nomination; within the year he moved his

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THE GAME

And on certain nights,
maybe once or twice a year,
I'd carry the baby down
and all the kids would come,
all nine of us together,
and we'd build a town in the basement

from boxes and blankets and overturned chairs.
And some lived under the pool table
or in the bathroom or the boiler room
or in the toy cupboard under the stairs,
and you could be a man or a woman,
a husband or a wife or a child, and we bustled around
like a day in the village until

one of us turned off the lights, switch
by switch, and slowly it became night
and the people slept.

Our parents were upstairs with company or
not fighting, and one of us—it was usually
a boy—became the Town Crier,
and he walked around our little sleeping
population and tolled the hours with his voice,
and this was the game.

Nine o'clock and all is well, he'd say,
walking like a constable we must have seen
in a movie. And what we called an hour passed.

Ten o'clock and all is well.
And maybe somebody stirred in her sleep
or a grown-up baby cried and was comforted . . .
Eleven o'clock and all is well.
Twelve o'clock. One o'clock. Two o'clock . . .

and it went on like that through the night we made up
until we could pretend it was morning.

—MARIE HOWE

family to California. Over the next decade his services were in considerable demand in Hollywood, where, owing to the perceived eerieness of his modernist idiom, he was quickly typecast as a specialist in chase scenes and horror effects. (Channel surfing across late-night TV, I continually bump up against his distinctive strains: *Dr. Cyclops*; the midnight sleigh chase in Shirley Temple's *Heidi*; Bob Hope's *The Ghost Breakers*; *Ladies in Retirement*, which earned him another nod from the Academy of Motion Picture Arts and Sciences; the Hallelujah sequence in Charles Laughton's *The Hunchback of Notre Dame*.)

In December of 1937 Toch received word of the death of his mother, in Vienna. While attending the ritual prayers for the dead at a local synagogue he conceived the idea of a memorial cantata based on the Passover Haggadah. Having strayed considerably from the more circumscribed orthodoxies of his youth, Toch insisted that he was drawn to the universal implications of this tale of the liberation of the Jews from their Egyptian oppressors. But surely his developing *Cantata of the Bitter Herbs* took on more urgency during the terrible months of its creation. As he was composing a particularly haunting chorus based on the psalmist's text "When Adonai brought back his sons to Zion, it would be like a dream," Hitler's forces were triumphantly goose-stepping their way into Vienna, sealing off the town of his birth.

The Anschluss initiated a vertiginous period of desolation in Toch's life. Gnawing anxiety about the fate of trapped friends and relatives (he had more than sixty cousins in Austria) was sublimated into time-consuming negotiations with international bureaucracies in desperate and often futile attempts to gain their freedom; more than thirty didn't make it out, and Lilly's sister, too, perished in Theresienstadt. The financial pressures of sponsoring a burgeoning family of dispossessed exiles, and of meeting U.S. affidavit requirements by showing that he could, if necessary, support still others, forced him to channel ever larger portions of his creative time into the most lucrative possible employments—teaching on the one hand (he was appointed to a composition chair at the University of Southern California) and Hollywood on the other. The studios' notorious caprices, such as the blanket elimination of the upper registers from one of his scores as a cost-cutting measure, increasingly grated on him. Furthermore, the loss of any sort of responsive audience rendered the few hours he was able to preserve for his own work increasingly hollow. As he complained to a friend in a 1943 letter, "For quite some time . . . disappointments and sorrows render me frustrated and lonesome. I become somehow reluctant to go on writing if my work remains more or less paper in desks and on shelves."

Underlying all his anxiety was the fear that he had squandered his musical vocation, that he had lost everything—even, in effect, his pencil. Indeed, these years were parched by the most harrowing dry spell of his life. Although from 1919 to 1933 Toch had created more than thirty-five of his own works, from 1933 to 1947 he struggled to create eight.

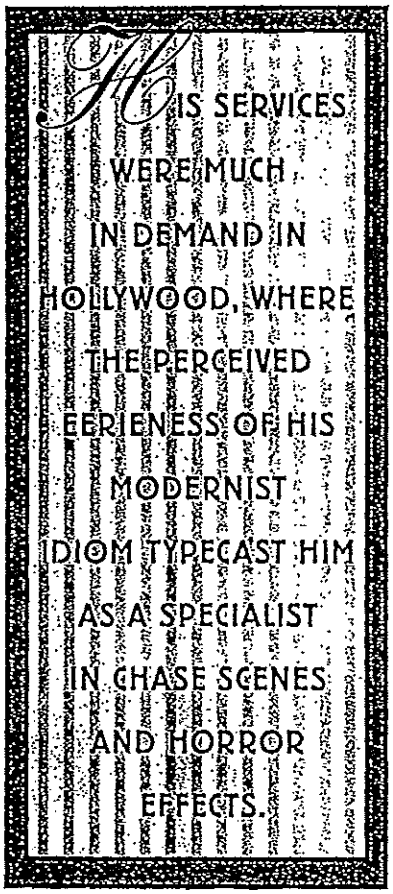
ERNST TOCH ARCHIVE/COURTESY OF UCLA MUSIC LIBRARY SPECIAL COLLECTIONS

Above: The Seattle Times, *1932; left: Toch conducting his "musical autoblography" in 1955*

And yet somehow, perhaps tapping a primal source available only to one brought so low, Toch was on the verge of a stupendous regeneration. In letters at the end of the war he began exploring the image of the rainbow, token of renewal. For his own renewal he returned to first things—that is, to the string quartet. "As for me," he wrote to another friend, "I am in the midst of writing a string quartet, the first of its

kind after eighteen years. Writing a string quartet was a sublime delight before the world knew of the atom bomb, and—in this respect it has not changed—it still is." The quartet (op. 70) bore as a motto lines from a poem by Eduard Mörike: "I do not know what it is I mourn for—it is unknown sorrow; only through my tears can I see the beloved light of the sun." And through the shimmery pizzicato of the third movement the listener can see it too.

Toch was simultaneously completing his book *The Shaping Forces in Music*, a labor born of his frustration as a teacher at the lack of texts capable of integrating modern and classical styles. As for most existing theoretical work, "there seemed to be," he wrote to a friend, "a break all along the line, either discrediting our contemporary work or everything that has been derived from the past. To my amazement, I find that [traditionally based] theories are only false with reference to contemporary music because they are just as false with reference to old music, from which they have been deduced; and that in correcting them to precision, you get the whole immense structure of music into your focus."



The years after the war paradoxically proved the most difficult of all, for now extraneous obligations threatened to strangle Toch's reviving vocation. Tormented by these conflicting pressures, he was felled by a major heart attack in the autumn of 1948.

He almost died. Later he would say he'd undergone a "religious epiphany." Pressed to explain what he meant, he noted that the word "religion" derives from the Latin *religare*, meaning "to tie, to tie fast, to tie back." "Tie what to what?" he went on. "Tie man to the oneness of the Universe, to the creation of which he feels himself a part, to the will that willed his existence, to the law he can only barely divine. . . ."

As soon as he had recovered sufficiently to travel, Toch returned to Vienna, the city of his childhood, to compose his first symphony. It would be followed, during the remaining fifteen years of his life, by six more. Such a complete symphonic flowering so late in a composer's life was virtually unprecedented in the history of music.

The first three symphonies, surging once again in his modernist idiom, should be interpreted as a musical triptych —a sustained outpouring from that single epiphanic source.

To his First Symphony, Toch assigned a motto from Luther: "Although the world with devils filled should threaten to undo us, we will not fear, for God has willed his truth to triumph through us." His Second Symphony, dedicated to Albert Schweitzer, a man he revered (he would insist that the symphony had been not only dedicated to Schweitzer but "dictated" by him), carried the biblical motto from Jacob's wrestling with the Angel: "I will not let thee go except thou bless me." For his Third Symphony, in 1955, Toch deployed a quotation from Goethe's *The Sorrows of Young Werther*: "Indeed I am a wanderer, a pilgrim on this earth—but what else are you?" The lines accomplish a harmonic conflation of the German and the (wandering) Jewish traditions, and at the same time transmute intimate autobiography—Toch would often refer to this piece as his musical autobiography—into a microcosm of universal human history.

Toch's productivity continued unabated until his death; he moved through almost thirty opus numbers in fifteen years. But what he was really on the lookout for the entire time, as he told anyone he thought might be able to help, was a good libretto. At one point he felt he'd found an ideal opera subject in Lion Feuchtwanger's late novel *Jephta*—a sort of Hebraic *Iphigenia* in which a great Jewish general is required to sacrifice his daughter for the sake of victory. But he couldn't wait for a writer to adapt the text; the music erupting inside him poured forth instead as his Fifth Symphony.

In 1960 the Hungarian violinist Feri Roth, who had recorded several of Toch's quartets, mentioned to Toch that he'd recently been talking with the noted playwright and scenarist Melchior Lengyel about a dramatic piece Lengyel had composed years before in Budapest but had begun to feel might work better as a libretto. It sometimes seemed that there were almost as many Hungarian émigré artists on the fringes of Hollywood as there were Germans. (Gottfried Reinhardt, in his delightful memoir of his father, Max, tells a story about visiting the Clover Club, a gambling casino on Sunset Boulevard, one evening in the company of Otto Preminger. As it happened, they were the only two non-Hungarians at the roulette table, and the agglutinative language of their neighbors so grated on Preminger's nerves that finally he "brought his fist down on the baize, shouting, 'Goddammit, guys, you're in America! Speak German!'") Lengyel, who had collaborated in Budapest with the young Georg Lukacs and had scripted Bartók's ballet *The Miraculous Mandarin*, was also quite successful in Holly-

wood, providing the stories for both *Ninotchka* and *To Be or Not to Be*. But now he was looking for a composer.

Roth brought the two men together. Lengyel summarized his idea for an opera based on Scheherazade's last tale, and Toch seemed sufficiently intrigued that Lengyel offered to have the text translated. When the translation arrived one morning some weeks later, Toch retreated into his study with the manuscript and, quite unusually, didn't emerge for lunch. When Lilly, concerned, eventually broke in with a snack tray—also quite unusually—she found him radiant with excitement and the manuscript already copiously scrawled over with musical motifs.

It is easy to see in Lengyel's story the themes that so called out to Toch, a man in his seventy-third year whose life had been haunted by motifs of tyranny and deliverance, of exhaustion and renewal, of blockage and release. It is a bit harder to see how a man of his age and relatively fragile constitution could summon the sheer physical stamina required for such an ambitious undertaking. But almost rapturously possessed, Toch threw himself into the project, composing some of the most intricately layered and subtly modulated music of his entire career. Indeed, so possessed was he during the two years of the work's composition that he managed to remain entirely oblivious of the onset of the cancer that would claim his life not long after its completion.

The end, when it came (or at least his awareness of its approach), was relatively sudden. He was rushed to the hospital, and was dead within a few weeks, of stomach cancer. The sketches left by his bedside were for a new string quartet.

As Complicated as the Knots It Unties

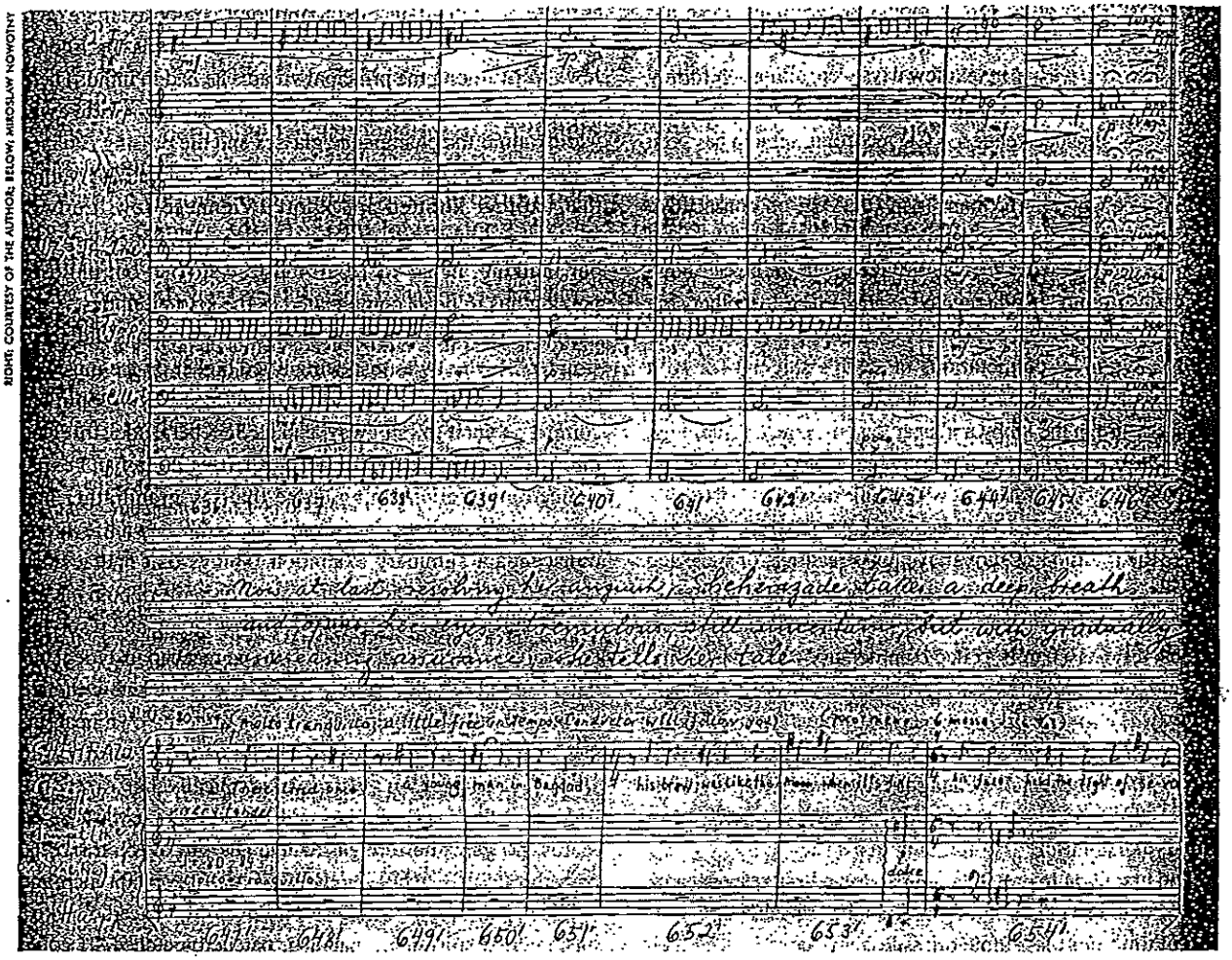
THE German-Serbian Folk Theater, in Bautzen. To begin with, it turned out to be *Sorbian*, not Serbian, as I discovered flipping through a tourist brochure shortly after my arrival at the hotel. The Sorbs, otherwise known as the Wends (and no particular relation to the Balkan Serbs, though they have sometimes displayed a confusing tendency to spell themselves "Serb" as well), apparently constitute a kind of historical hiccup, ethnically speaking—an ancient "Slavonic," which is to say Slavic, people stranded behind the lines deep in Germanic Saxony, with Bautzen as their cultural capital. The brochure detailed all sorts of distinctive folk costumes—exquisitely dentilated lace aprons, collars, and headdresses for the women, stiff black caps or top hats for the men—none of which were in evidence as I gazed out my hotel window onto the town's main square.

Nor, for that matter, was there anything particularly Sorbische about the Deutsch-Sorbisches Volkstheater. Sorbs had been somewhat coddled by the East German regime—that is to say, considerable subsidies had been lavished upon "Sorbische" cultural institutions in exchange for Sorbian political quiescence. But despite the fact that the existence of a distinctive Sorbian "nation" is recognized in the German unification documents of 1990, Sorbian culture has clearly withered considerably over the past several decades, such that at the Volkstheater the staffing and programming—on the musical side, anyway—have virtually nothing distinctively Sorbian about them. One veteran could recall the token programming of at most three or four pieces by Sorbian composers in the entire twenty years he'd been there.

While walking around the neighborhood the afternoon before the premiere (Bautzen is a picturesque town spreading out from a medieval fortified core that commands an escarpment over the swift-flowing river Spree), I happened upon a somewhat more pertinent feature of local history. In the bowels of the judicial building, according to a plaque only recently set into its outer walls, the East German security police—the regime's dread Stasi—had maintained one of their principal interrogation and incarceration centers for political prisoners; the center itself had been closed since 1992. Indeed, as I learned from a pamphlet I picked up in a nearby kiosk, Bautzen since the beginning of this century had been an internment center for successive regimes. (A vaster complex on the outskirts of town had been used by the Nazis—and was mentioned in the epic *Schindler's List*, under the name Budysin—and then by the Soviets as an internment center for ex-Nazis.)

According to the pamphlet, the interrogation center inside the judicial building must have been a truly dystopian institution. The pamphlet quoted Walter Janka, an East German publisher and a veteran of the Spanish Civil War, who had served time there under both the Nazis and the Stasi. The Stasi forbade him to have any reading or writing materials, and when he complained to his interrogators that not even the Nazis had promulgated such a blanket policy, he received the chilling reply, "Well, we're not in Nazi times anymore." Among the torments favored by the Stasi were extended stints in isolation and standing erect for days at a time in so-called tiger cages. For a while, I learned, the town's two biggest employers had been the various Sorbian associations and the two prisons.

So I was not entirely surprised, when I attended the opera's final rehearsal later that day (the company had decided to dispense with the opera's original title and produce it as *Scheherazade*), to see that the director, Wolfgang Poch, was framing his production at least in part as a political allegory. His casting had a vaguely subversive edge to it, with the role of Scheherazade going to a lovely Dutch soprano, Marieke van der Meer, who provided the focus for the contest between a Russian Sultan (the bass Oleg Ptucha) and an American Alcazar (the tenor Robert Lischetti). More to the point was Poch's inspired shading of the Sultan's court, which was portrayed as foppishly servile to the tyrant's every whim—right up, that is, until a moment near the end, when it seemed to melt into the woodwork, as if it had never played any role in bolstering the despot's terrible rule



RIGHT: COURTESY OF THE AUTHOR; BELOW, MIROSLAW NOWOTNY

Score of Toch's Scheherazade *in the composer's hand; below, scene from the opera's 1995 premiere (at last!)*

("Sultan?" the courtiers seemed to say. "What Sultan?").

Poch, as it turned out, was a West German, a journeyman opera director and a veteran of more than 150 productions and assorted head postings in houses all over Europe, who in 1993 had applied to take over this regional company almost on a whim, and had grown more and more convinced of its potential. A high-strung enthusiast, tall, lanky, and somewhat frail, with a great bobbing Adam's apple as his paramount feature, the sixty-year-old director described his efforts to widen the provincial company's range and heighten its visibility through challenging programming; earlier, for instance, it had tackled the world premiere of Weill's *Der Kuhhandel*. Poch had come to know Toch's music in his university days, in Berlin. The son of a half-Jewish mother who had survived the war by passing as an Aryan, Poch made it something of a mission to resurrect the work of this man who had been so unjustly forgotten. For years, completely unbeknownst to me, Poch had likewise been trying to produce the Scheherazade opera, and he had almost succeeded when he headed the company in Baden Baden, the site of some of Toch's most celebrated triumphs at annual music festivals during the Weimar era. His devotion was touchingly lavish, and the more he talked, the more it seemed that this opera in particular had grown to exert an almost demonic hold over him.

I frankly didn't know what to expect from such a marginal-seeming production. But as the lights dimmed and a hush fell over the first-night crowd, I was more and more pleasantly surprised. The stage set was steeped in a sort of Klimt or Hundertwasser Orientalism, and if the staging was a bit static, the musicianship of the orchestra, under the direction of Dieter Kempe, a veteran Bautzener, was astoundingly competent—a legacy of East German cultural policy, perhaps; I was assured that the East was teeming with such proficient regional ensembles. The singing of the principal players, especially Van der Meer, was

generally transporting and at moments luminous. (Van der Meer, I learned, had been born exactly two days before Toch died.) The reviews in the next few days were almost uniformly favorable, with several critics calling for further performances in better-established venues. A CD recording session has been slated for 1998 with the Leipzig Gewandhaus orchestra.

I attended two performances in Bautzen, on consecutive nights, and in both cases the audience, made up primarily of local people, seemed authentically taken with the piece, showering the ensemble with repeated ovations. But in neither case did more than a few of the audience members register the blatantly allegorical connotations of Poch's staging—or so it seemed, on the basis of conversations I had with several people afterward in the lobby and near the coat check. Charming, I was told, captivating, wonderfully moving. But apt, relevant, pertinent? My questions met with blank stares.

This would never have been the case in nearby Poland, where the tradition of subversive mass readings of stage and literary works is so entrenched that for years every production of Shakespeare was viewed primarily (and sometimes exclusively) as a barely veiled commentary on Polish reality. From what I could tell during those few days in Bautzen, anyway, the former East Germany may have been different: the capacity for such an ironic reading, the sense of imaginative play or subversive engagement or even simple curiosity about the past, seemed to have all but completely atrophied, like a muscle kept too long in a cast.

The first night in particular this hollowed-out response rankled. I couldn't help thinking that a similar pusillanimity—a sort of timorous mass thoughtlessness, to cast matters in their best possible light—had abetted not only the Stasi regime but the Nazi dictatorship before that. Seen in that light, this willful obliviousness was as responsible as anything else for the calamitous breakup of my grandfather's career. Yet it was also true that it was Germans, and these provincial Germans in particular, who had gone to the trouble (as performers) to resurrect Toch's languishing last major opus and (as an audience) to open themselves to that act of reclamation. My ambivalent feelings were in some sense an echo of my grandfather's. Shattered as he had been by his repudiation and exile—an exile that had begun when he was almost exactly the age I was now—he had insisted all along on seeing himself first and foremost as an heir to the Austrian-German tradition. He had thus remained within the German-Jewish assimilationist tradition that seemed to treasure the German cultural heritage—that seemed to *need* to treasure that heritage—even more than did the Germans themselves. How else to account for his return to Vienna, of all places, so shortly after the war—Vienna, the fount of some of the worst anti-Semitism in all the German lands, both before and during the Nazi period—except to say that yes, Vienna was all that, but it was also the very headwaters of his creative vocation? Or, beyond that, to account for his choice of Luther, of all people, as the voice behind his First Symphony, composed there? After all, when Luther spoke of a "world with devils filled," Jews were among the principal villains he had in mind. There were knots upon knots in all this, and, standing a trifle awkwardly amid the champagne glasses and the passing canapés at the post-premiere party, I was reminded of an observation that another knotted and knotty Viennese Jew, Ludwig Wittgenstein, once made—how philosophy unties knots in our thinking, hence its result must be simple, but philosophizing has to be as complicated as the knots it unties.

The next night, though, for some reason things did seem simpler. Maybe I was just being lifted higher by the music itself, as I grew more familiar with it. The vexing political context seemed to fall away, and as Scheherazade struggled through her block and into the transporting narrative, I experienced an overwhelming sense that my grandfather had drawn together all the disparate themes of his own life in one transcendant summary exaltation. Things that had seemed chopped and broken and scattered—the shards of both his life and his music—were retrospectively realigning and resolving themselves. As Scheherazade's last aria reached its lyrical climax, I found myself remembering a letter Toch had written to a young would-be composer not long after his own heart attack—and on the verge of his astonishing regeneration—in 1949. "A composition must grow organically, like a tree," he had urged the young man to understand. "There must be no seams, no gaps, no foreign matter. The sap of the tree must pass through the whole body of it, reach every branch and twig and leaf of it. It must grow, grow, grow, instead of [like a mismatched suit] being patched, patched, patched." I could see that Toch had been talking not only about the composition of a piece of music but also about the composition of a life—and, for that matter, of a family line. And as the audience now rose in ovation, showering particular kudos on their beloved Poch, who stood there drained and pale, trembling in his triumph (for, as none of us realized at the time, he was already riddled with a cancer that would claim his life within a few months—this would be almost his last tale too), I found myself realizing how for Ernst the spiritual challenge was the same in both instances. I suddenly recalled some lines from one of the last notes he ever wrote to Lilly—the one with which, Scheherazadelike, she had chosen to conclude her oral history before herself going on to die. It consisted of a poem in which he acknowledged all the sacrifices she had made in his behalf over the almost fifty years of their life together, assuring her that he was aware of the suffering such sacrifices had often entailed—an awareness that was his despair. Yet he begged her forgiveness: it couldn't be helped, for, as he, and she, and now I concluded by way of explanation,

Ich treibe nicht—ich werde getrieben
Ich schreibe nicht, ich werde geschrieben!
I do not press, I am pressed—
I do not write, I am written!

To Russell Webber, 1217 Grand Ave., Minneapolis 6, Minn.

TOCH: LETTER TO A WOULD-BE COMPOSER; 1949

Jan. 14, 49

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Dear Mr. Webber:

I have tried my very best - in all conscientiousness - to help you. I must go one step farther, even at the risk not to be fully understood by you, whom I do not know personally; though I hope you will understand and believe me if you, too, do your best, follow all my remarks equally conscientiously and without sensitivity and vanity, just as you would trust and submit to the diagnosis of an experienced doctor, even though it may hurt at the moment. There is no other way to real help.

Your case is by no means hopeless; let me anticipate this. On the contrary, you show definitely a certain musical imagination and a natural leaning, even gift; your choice of a musical form which probably is the hardest to master, speaks for the earnestness of your ambition and musical taste. But you lack completely even the most fundamental and primitive bases of knowledge, in every direction. And unavowedly, you betray even your subconscious (or conscious?) awareness of this deplorable status of your knowledge or lack of knowledge. What you really mean to compose is a fugue - why resort to subterfuges and excuses? But somehow you feel your incompetency; so you call it bashfully, pretending modesty, a "Fugato". In doing so, you try, unconsciously or half consciously, to invite leniency on the part of the expert, your possible critic. You try to cover up your shortcomings before yourself; you try to deceive yourself. Why? I am sorry I have to tell you it is far from being a "fugato" as well - if we ever should admit such a principal difference other than in seize or weight; but a fugue, collapsing in its very fundaments right from its start to the whole of its ill course, does not make a "fugato" either. Complete insufficiency does not enter the meaning of the term. Nor can I help having the same feeling as to your psychic reasons for calling the customary Prelude, bashfully again (and ornately at the same time) "Entrada" (or "Intrada", as you write). The reason for its shortness is no other than the fact that your muse deserted you deplorably [illegible] prematurely, leaving you in the barren field without knowledge, where to turn or what to do; so you jump incoherently - incoherence is the paramount feature of your whole composition - into the motivical, or preparatory, announcement of the fugue theme (good as this in itself.)

Let me make a comparison. You take a piece of cloth (we will skip the question if this piece of cloth, or material, is good in itself; it may be at least workable, anyway) and decide to make a suit of it for yourself. It turns out that the suit is no good. One trouser is much too long as the other is too short; the same with the sleeves; one of them besides, is sewed in upside down; the lining appears on the outside instead of inside; the pockets are in the back; no two buttons are alike in size or colour etc, etc, etc. What are you going to do, instead of the only reasonable thing, namely, to throw it into the fire and learn first how to tailor? You try to think of the best tailors in the country and mail the miscarriage to one of them, or to some of them, expecting them to remedy the calamity.

I assure you, the only way of "correcting" your composition for me or any composer of my standards would be to recompose the whole thing from the first to the last bar; and, of course, you cannot expect to find any such composer to do that. Speaking of coherence: A composition must grow organically, like a tree; there must be no seams, no gaps, no foreign matter; the sap of the tree must pass through the whole body of it, reach every branch

and twig and leaf of it. It must grow, grow, grow instead of being patched, patched, patched, unorganically. Instead of putting pieces of a whole together, as I say, uncoherently, you must let them grow out of one another, join them coherently, overlap their limbs or sections, instead of letting them dangle in the air miserably. I say again, read my book "The Sh.F...", read it very attentively, study it; most of all the section "Form", especially Chapter XL "the Art of Joining", follow closely all analyses. (I am sure you can get the book in your public library; it apreared last July.) Also in the section "Melody" you will find much you need badly. Your orchestration is just as wanting. It must help to clarify a fugue; by opposing the various sections - woodwinds, brass, strings; let only one of them play at a time, the prec then joining them gradually and keeping them transparent all the time, being always intent on the plasticity of the piece (for which, to be sure, it first has to be composed accordingly). Your orchestration is most of the time a muddle, just the opposite of plastic. Summarising: What you need is to study, tho study hard, to study still harder. Listen to good music as much as you can, copy master scores with open eyes and ears; listen while reading the score.

Believe me, I spent the better part of a week with you score. If I would charge you at the rate of my teaching fee, it would cost a fortune. As it is, and since, inspite of best will on both sides, I might have caused you some disappointment, may be even be some personal hurt (which I could not help and which, I am sure, will still turn out for the better to you if you take to heart everything I told you and read everything in the score and in the letter carefully,) I will not even refer to my first letter and just forget about the balance. I will admit that much is performed now a days which is not much of a composition either. But this fact cannot change my standards and should not influence yours either, if you take art seriously, as everyone must do who wants real achievement and accomplishment.

Sincerely

Ernest Bloch

Lawrence Weschler
The Fiction of Nonfiction
{Form & Freedom}

Week Three (Freedom)

Grace Paley, "A Conversation with My Father"

Wyslawa Szymborska, "Could Have"

Stanislaw Lem, "Impossibilitate Vitae"
from *A Perfect Vacuum*

Ellen Pall, "Painting Life into Sammy"

Ian Frazier, "Nobody better, Better than Nobody" (Heloise)
Passage from Chapter 10 of *Family*

Lawrence Weschler, Breytenbach profile
from the book *Calamities of Exile*

A Conversation with My Father

Grace Paley
from Enormous Changes at the Last Minute
Farrar, Straus & Giroux (1974)

My father is eighty-six years old and in bed. His heart, that bloody motor, is equally old and will not do certain jobs any more. It still floods his head with brainy light. But it won't let his legs carry the weight of his body around the house. Despite my metaphors, this muscle failure is not due to his old heart, he says, but to a potassium shortage. Sitting on one pillow, leaning on three, he offers last-minute advice and makes a request.

"I would like you to write a simple story just once more," he says, "the kind de Maupassant wrote, or Chekhov, the kind you used to write. Just recognizable people and then write down what happened to them next."

I say, "Yes, why not? That's possible." I want to please him, though I don't remember writing that way. I *would* like to try to tell such a story, if he means the kind that begins: "There was a woman . . ." followed by plot, the

absolute line between two points which I've always despised. Not for literary reasons, but because it takes all hope away. Everyone, real or invented, deserves the open destiny of life.

Finally I thought of a story that had been happening for a couple of years right across the street. I wrote it down, then read it aloud. "Pa," I said, "how about this? Do you mean something like this?"

> Once in my time there was a woman and she had a son. They lived nicely, in a small apartment in Manhattan. This boy at about fifteen became a junkie, which is not unusual in our neighborhood. In order to maintain her close friendship with him, she became a junkie too. She said it was part of the youth culture, with which she felt very much at home. After a while, for a number or reasons, the boy gave it all up and left the city and his mother in disgust. Hopeless and alone, she grieved. We all visit her.

"O.K., Pa, that's it," I said, "an unadorned and miserable tale."

"But that's not what I mean," my father said. "You misunderstood me on purpose. You know there's a lot more to it. You know that. You left everything out. Turgenev wouldn't do that. Chekhov wouldn't do that. There are in fact Russian writers you never heard of, you don't have an inkling of, as good as anyone, who can write a plain ordinary story, who would not leave out what you have left out. I object not to facts but to people sitting in trees talking senselessly, voices from who knows where . . ."

"Forget that one, Pa, what have I left out now? In this one?"

"Her looks, for instance."

"Oh. Quite handsome, I think. Yes."

"Her hair?"

"Dark, with heavy braids, as though she were a girl or a foreigner."

"What were her parents like, her stock? That she became such a person. It's interesting, you know."

"From out of town. Professional people. The first to be divorced in their county. How's that? Enough?" I asked.

"With you, it's all a joke," he said. "What about the boy's father? Why didn't you mention him? Who was he? Or was the boy born out of wedlock?"

"Yes," I said. "He was born out of wedlock."

"For Godsakes, doesn't anyone in your stories get married? Doesn't anyone have the time to run down to City Hall before they jump into bed?"

"No," I said. "In real life, yes. But in my stories, no."

"Why do you answer me like that?"

"Oh, Pa, this is a simple story about a smart woman who came to N.Y.C. full of interest love trust excitement very up to date, and about her son, what a hard time she had in this world. Married or not, it's of small consequence."

"It is of great consequence," he said.

"O.K.," I said.

"O.K. O.K. yourself," he said, "but listen. I believe you that she's good-looking, but I don't think she was so smart."

"That's true," I said. "Actually that's the trouble with stories. People start out fantastic. You think they're extraordinary, but it turns out as the work goes along, they're just average with a good education. Sometimes the other way around, the person's a kind of dumb innocent, but he outwits you and you can't even think of an ending good enough."

"What do you do then?" he asked. He had been a doctor for a couple of decades and then an artist for a couple of decades and he's still interested in details, craft, technique.

"Well, you just have to let the story lie around till some agreement can be reached between you and the stubborn hero."

"Aren't you talking silly, now?" he asked. "Start again," he said. "It so happens I'm not going out this evening. Tell the story again. See what you can do this time."

"O.K.," I said. "But it's not a five-minute job." Second attempt:

> Once, across the street from us, there was a fine handsome woman, our neighbor. She had a son whom she loved because she'd known him since birth (in helpless chubby infancy, and in the wrestling, hugging ages, seven to ten, as well as earlier and later). This boy, when he fell into the fist of adolescence, became a junkie. He was not a hopeless one. He was in fact hopeful, an ideologue and successful converter. With his busy brilliance, he wrote persuasive articles for his high-school newspaper. Seeking a wider audience, using important connections, he drummed into Lower Manhattan newsstand distribution a periodical called *Oh! Golden Horse!*
>
> In order to keep him from feeling guilty (because guilt is the stony heart of nine tenths of all clinically diagnosed cancers in America today, she said), and because she had always believed in giving bad habits room at home where one could keep an eye on them, she too became a junkie. Her kitchen was famous for a while—a center for intellectual addicts who knew what they were doing. A few felt artistic like Coleridge and others were scientific and revolutionary like Leary. Although she was often high herself, certain good mothering reflexes remained, and she saw to it that there was

> lots of orange juice around and honey and milk and vitamin pills. However, she never cooked anything but chili, and that no more than once a week. She explained, when we talked to her, seriously, with neighborly concern, that it was her part in the youth culture and she would rather be with the young, it was an honor, than with her own generation.
>
> One week, while nodding through an Antonioni film, this boy was severely jabbed by the elbow of a stern and proselytizing girl, sitting beside him. She offered immediate apricots and nuts for his sugar level, spoke to him sharply, and took him home.
>
> She had heard of him and his work and she herself published, edited, and wrote a competitive journal called *Man Does Live By Bread Alone.* In the organic heat of her continuous presence he could not help but become interested once more in his muscles, his arteries, and nerve connections. In fact he began to love them, treasure them, praise them with funny little songs in *Man Does Live . . .*
>
> *the fingers of my flesh transcend*
> *my transcendental soul*
> *the tightness in my shoulders end*
> *my teeth have made me whole*
>
> To the mouth of his head (that glory of will and determination) he brought hard apples, nuts, wheat germ, and soybean oil. He said to his old friends, From now on, I guess I'll keep my wits about me. I'm going on the natch. He said he was about to begin a spiritual deep-breathing journey. How about you too, Mom? he asked kindly.
>
> His conversion was so radiant, splendid, that neighborhood kids his age began to say that he had never been a real addict at all, only a journalist along for the smell of the story. The mother tried several times to give up what had become with-

out her son and his friends a lonely habit. This effort only brought it to supportable levels. The boy and his girl took their electronic mimeograph and moved to the bushy edge of another borough. They were very strict. They said they would not see her again until she had been off drugs for sixty days.

At home alone in the evening, weeping, the mother read and reread the seven issues of *Oh! Golden Horse!* They seemed to her as truthful as ever. We often crossed the street to visit and console. But if we mentioned any of our children who were at college or in the hospital or dropouts at home, she would cry out, My baby! My baby! and burst into terrible, face-scarring, time-consuming tears. The End.

First my father was silent, then he said, "Number One: You have a nice sense of humor. Number Two: I see you can't tell a plain story. So don't waste time." Then he said sadly, "Number Three: I suppose that means she was alone, she was left like that, his mother. Alone. Probably sick?"

I said, "Yes."

"Poor woman. Poor girl, to be born in a time of fools, to live among fools. The end. The end. You were right to put that down. The end."

I didn't want to argue, but I had to say, "Well, it is not necessarily the end, Pa."

"Yes," he said, "what a tragedy. The end of a person."

"No, Pa," I begged him. "It doesn't have to be. She's only about forty. She could be a hundred different things in this world as time goes on. A teacher or a social worker. An ex-junkie! Sometimes it's better than having a master's in education."

"Jokes," he said. "As a writer that's your main trouble.

You don't want to recognize it. Tragedy! Plain tragedy! Historical tragedy! No hope. The end."

"Oh, Pa," I said. "She could change."

"In your own life, too, you have to look it in the face." He took a couple of nitroglycerin. "Turn to five," he said, pointing to the dial on the oxygen tank. He inserted the tubes into his nostrils and breathed deep. He closed his eyes and said, "No."

I had promised the family to always let him have the last word when arguing, but in this case I had a different responsibility. That woman lives across the street. She's my knowledge and my invention. I'm sorry for her. I'm not going to leave her there in that house crying. (Actually neither would Life, which unlike me has no pity.)

Therefore: She did change. Of course her son never came home again. But right now, she's the receptionist in a storefront community clinic in the East Village. Most of the customers are young people, some old friends. The head doctor has said to her, "If we only had three people in this clinic with your experiences . . ."

"The doctor said that?" My father took the oxygen tubes out of his nostrils and said, "Jokes. Jokes again."

"No, Pa, it could really happen that way, it's a funny world nowadays."

"No," he said. "Truth first. She will slide back. A person must have character. She does not."

"No, Pa," I said. "That's it. She's got a job. Forget it. She's in that storefront working."

"How long will it be?" he asked. "Tragedy! You too. When will you look it in the face?"

WISŁAWA SZYMBORSKA

Poems New and Collected 1957–1997

Translated from the Polish
by Stanisław Barańczak and Clare Cavanagh

HARCOURT BRACE & COMPANY
New York San Diego London

COULD HAVE

It could have happened.
It had to happen.
It happened earlier. Later.
Nearer. Farther off.
It happened, but not to you.

You were saved because you were the first.
You were saved because you were the last.
Alone. With others.
On the right. The left.
Because it was raining. Because of the shade.
Because the day was sunny.

You were in luck—there was a forest.
You were in luck—there were no trees.
You were in luck—a rake, a hook, a beam, a brake,
a jamb, a turn, a quarter inch, an instant.
You were in luck—just then a straw went floating by.

As a result, because, although, despite.
What would have happened if a hand, a foot,
within an inch, a hairsbreadth from
an unfortunate coincidence.

So you're here? Still dizzy from another dodge, close shave,
reprieve?
One hole in the net and you slipped through?
I couldn't be more shocked or speechless.
Listen,
how your heart pounds inside me.

Stanislaw Lem

Translated from the Polish
by Michael Kandel

A PERFECT VACUUM

[Perfect Reviews of Nonexistent Books]

A Helen and Kurt Wolff Book
Harcourt Brace Jovanovich
New York and London

HBJ

Cezar Kouska

De Impossibilitate Vitae and *De Impossibilitate Prognoscendi*

(2 Volumes Statní Nakladatelství N. Lit., Prague)

The author is Cezar Kouska on the cover, but signs the Introduction inside the book as Benedykt Kouska. A misprint, an oversight in the proofreading, or an inconceivably devious device? Personally I prefer the name Benedykt, therefore I will stick with that. So, then, it is to Professor B. Kouska that I owe some of the most delightful hours of my life, hours spent in the perusal of his work. The views it expounds are unquestionably at odds with scientific orthodoxy; we are not, however, dealing here with pure insanity; the thing lies halfway in between, in that transitional zone where there is neither day nor night, and the mind, loosening the bonds of logic, yet does not tear them so asunder as to fall into gibberish.

For Professor Kouska has written a work that demonstrates that the following relationship of mutual exclusion obtains: either the theory of probability, on which stands natural history, is false to its very foundations, or the world of living things, with man at its head, does not exist. After which, in the second volume, the Professor argues that if prognostication, or futurology, is ever to become a reality and not an empty illu-

sion, not a conscious or unconscious deception, then that discipline cannot avail itself of the calculus of probability, but demands the implementation of an entirely different reckoning, namely—to quote Kouska—"a theory, based on antipodal axioms, of the distribution of ensembles in actual fact unparalleled in the space-time continuum of higher-order events" (the quote also serves to show that the reading of the work—in the theoretical sections—does present certain difficulties).

Benedykt Kouska begins by revealing that the theory of empirical probability is flawed in the middle. We employ the notion of probability when we do not know a thing with certainty. But our uncertainty is either purely subjective (we do not know what will take place, but someone else may know) or objective (no one knows, and no one can know). Subjective probability is a compass for an informational disability; not knowing which horse will come in first and guessing by the number of horses (if there are four, each has one chance in four of winning the race), I act like one who is sightless in a room full of furniture. Probability is, so to speak, a cane for a blind man; he uses it to feel his way. If he could see, he would not need the cane, and if I knew which horse was the fastest, I would not need probability theory. As is known, the question of the objectivity or the subjectivity of probability has divided the world of science into two camps. Some maintain that there exist two types of probability, as above, others, that only the subjective exists, because regardless of what is supposed to take place, *we* cannot have full knowledge of it. Therefore, some lay the uncertainty of future events at the door of our knowledge of them, whereas others place it within the realm of the events themselves.

That which takes place, if it really and truly takes place, takes place indeed: such is Professor Kouska's main contention. Probability comes in only where a thing has not yet taken place. So saith science. But everyone is aware that two duelists firing two bullets which flatten each other in midair, or that

breaking one's tooth, while eating a fish, on a ring which by accident one had dropped overboard at sea six years before and which was swallowed by that exact same fish, or—for that matter—that the playing, in three-four time, of Tchaikovsky's Sonatina in B Minor in a kitchen-utensil store by bursting shrapnel during a siege, because the shrapnel's metal balls strike the larger and smaller pots and pans exactly as the composition requires—that any of this, were it to happen, would constitute a happening most improbable. Science says in this regard that these are facts occurring with a very negligible frequency in the sets of occurrences to which the facts belong, that is, in the set of all duels, in the set of eating fish and finding lost objects in them, and in the set of bombardments of stores selling housewares.

But science, says Professor Kouska, is selling us a line, because all its twaddle about sets is a complete fiction. The theory of probability can usually tell us how long we must wait for a given event, for an event of a specified and unusually low probability, or, in other words, how many times it will be necessary to repeat a duel, lose a ring, or fire at pots and pans before the afore-mentioned remarkable things come about. This is rubbish, because in order to make a highly improbable thing come about it is not at all necessary that the set of events to which it belongs represent a continuous series. If I throw ten coins at once, knowing that the chance of ten heads coming up at the same time, or ten tails, works out to barely 1:796, I certainly do not need to make upward of 796 throws in order that the probability of ten heads turning up, or ten tails, become equal to one. For I can always say that my throws are a continuation of an experiment comprising all the past throws of ten coins at once. Of such throws there must have been, in the course of the last five thousand years of Earth's history, an inordinate number; therefore, I really ought to expect that straightaway all my coins are going to land heads up, or tails up. Meanwhile, says Professor Kouska, just you try and base your expectations on

such reasoning! From the scientific point of view it is entirely correct, for the fact of whether one throws the coins nonstop or puts them aside for a moment to eat *knedlach* in the intermission or go for a quick one at the corner bar, or whether—for that matter—it is not the same person who does the throwing, but a different one each time, and not all in one day but each week or each year, has not the slightest effect or bearing on the distribution of the probability; thus the fact that ten coins were thrown by the Phoenicians sitting on their sheepskins, and by the Greeks after they burned Troy, and by the Roman pimps in the time of the Caesars, and by the Gauls, and by the Teutons, and by the Ostrogoths, and the Tartars, and the Turks driving their captives to Stamboul, and the rug merchants in Galata, and those merchants who trafficked in children from the Children's Crusade, and Richard the Lion-Hearted, and Robespierre, as well as a few dozen tens of thousands of other gamblers, also is wholly immaterial, and consequently, in throwing the coins, we can consider that the set is extremely large, and that our chances of throwing ten heads or ten tails at once are positively enormous! Just you try and throw, says Professor Kouska, gripping some learned physicist or other probability theorist by the elbow so he can't escape, for such as they do not like having the falsity of their method pointed out to them. Just you try, you'll see that nothing comes of it.

Next, Professor Kouska undertakes an extensive thought experiment that relates not to some hypothetical phenomenon or other, but to a part of his own biography. We repeat here, in condensed form, some of the more interesting fragments of this analysis.

A certain army doctor, during the First World War, ejected a nurse from the operating room, for he was in the midst of surgery when she entered by mistake. Had the nurse been better acquainted with the hospital, she would not have mistaken the door to the operating room for the door to the first-aid station, and had she not entered the operating room, the surgeon

would not have ejected her; had he not ejected her, his superior, the regiment doctor, would not have brought to his attention his unseemly behavior regarding the lady (for she was a volunteer nurse, a society miss), and had the superior not brought this to his attention, the young surgeon would not have considered it his duty to go and apologize to the nurse, would not have taken her to the café, fallen in love with her, and married her, whereby Professor Benedykt Kouska would not have come into the world as the child of this same married couple.

From this it would appear to follow that the probability of the coming into the world of Professor Benedykt Kouska (as a newborn, not as the head of the Analytical Philosophy Department) was set by the probability of the nurse's confusing or not confusing the doors in the given year, month, day, and hour. But it is not that way at all. The young surgeon Kouska did not have, on that day, any operations scheduled; however, his colleague Doctor Popichal, who wished to carry the laundry from the cleaners to his aunt, entered the aunt's house, where because of a blown fuse the light over the stairwell was not working, because of which he fell off the third step and twisted his ankle; and because of this, Kouska had to take his place in surgery. Had the fuse not blown, Popichal would not have sprained his ankle, Popichal would have been the one operating and not Kouska, and, being an individual known for his gallantry, he would not have used strong language to remove the nurse who entered the operating room by mistake, and, not having insulted her, he would not have seen the need to arrange a tête-à-tête with her; but tête-à-tête or no tête-à-tête, it is absolutely certain in any case that from the possible union of Popichal and the nurse the result would have been not Benedykt Kouska but someone altogether different, with whose chances of coming into the world this study does not concern itself.

Professional statisticians, aware of the complicated state of the things of this world, usually wriggle out of having to deal with the probability of such events as someone's coming into

the world. They say, to be rid of you, that what we have here is the coincidence of a great number of divaricate-source causal chains and that consequently the point in space-time in which a given egg merges with a given sperm is indeed determined in principle, *in abstracto*; however, *in concreto* one would never be able to accumulate knowledge of sufficient power, that is to say all-embracing, for the practical formulation of any prognosis (with what probability there will be born an individual X of traits Y, or in other words *how long* people must reproduce before it is certain that a certain individual, of traits Y, will with absolute certainty come into the world) to become feasible. But the impossibility is technical only, not fundamental; it rests in the difficulties of collecting information, and not in the absence in the world (to hear them talk) of such information to collect. This lie of statistical science Professor Benedykt Kouska intends to nail and expose.

As we know, the question of Professor Kouska's being able to be born does not reduce itself merely to the alternative of "right door, wrong door." Not with regard to one coincidence must one reckon the chances of his birth, but with regard to many: the coincidence that the nurse was sent to that hospital and not another; the coincidence that her smile in the shadow cast by her cornet resembled, from a distance, the smile of Mona Lisa; the coincidence, too, that the Archduke Ferdinand was shot in Sarajevo, for had he not been shot, war would not have broken out, and had war not broken out, the young lady would not have become a nurse; moreover, since she came from Olomouc and the surgeon from Moravská Ostrava, they most likely would never have met, neither in a hospital nor anywhere else. One therefore has to take into account the general theory of the ballistics of shooting at archdukes, and since the hitting of the Archduke was conditioned by the motion of his automobile, the theory of the kinematics of automobile models of the year 1914 should also be considered, as well as the psychology of assassins, because not everyone in the place of that

Serb would have shot at the Archduke, and even if someone had, he would not have hit, not if his hands were shaking with excitement; the fact, therefore, that the Serb had a steady hand and eye and no tremors also has its place in the probability distribution of the birth of Professor Kouska. Nor ought one to ignore the overall political situation of Europe in the summer of 1914.

But the marriage in any case did not come about in that year, or in 1915, when the young couple became acquainted in good earnest, for the surgeon was detailed to the fortress of Przemyśl. From there he was to travel later to Lwów, where lived the young maiden Marika, whom his parents had chosen to be his wife out of financial considerations. However, as a result of Samsonov's offensive and the movements of the southern flank of the Russian forces, Przemyśl was besieged, and before long, instead of repairing to his betrothed in Lwów, the surgeon proceeded into Russian captivity when the fortress fell. Now, he remembered the nurse better than he did his fiancée, because the nurse not only was fair but also sang the song "Sleep, Love, in Thy Bed of Flowers" much more sweetly than did Marika, who had an unremoved polyp on her vocal cords and from this a constant hoarseness. Marika was, in fact, to have undergone an operation to remove the polyp in 1914, but the otorhinolaryngologist who was supposed to remove the polyp, having lost a great deal of money in a Lwów casino and being unable to pay off his debt of honor (he was an officer), instead of shooting himself in the head, robbed the regimental till and fled to Italy; this incident caused Marika to conceive a great dislike for otorhinolaryngologists, and before she could decide on another she became betrothed; as a betrothed she was obliged to sing "Sleep, Love, in Thy Bed of Flowers," and her singing, or, rather, the memory of that hoarse and wheezy voice, in contrast—detrimental to the betrothed—with the pure timbre of the Prague nurse, was responsible for the latter's gaining ascendancy, in the mind of doctor-prisoner Kouska,

over the image of his fiancée. So that, returning to Prague in the year 1919, he did not even think to look up his former fiancée but immediately went to the house in which the nurse was living as a marriageable miss.

The nurse, however, had four different suitors; all four sought her hand in marriage, whereas between her and Kouska there was nothing concrete except for the postcards he had sent her from captivity, and the postcards in themselves, smudged with the stamps of the military censor, could not have been expected to kindle in her heart any lasting feeling. But her first serious suitor was a certain Hamuras, a pilot who did not fly because he always got a hernia when he moved the airplane's rudder bar with his feet, and this because the rudder bars in the airplanes of those days were hard to move—it was, after all, a very primitive era in aviation. Now, Hamuras had been operated on once, but without success, for the hernia recurred, recurred because the doctor performing the operation had made a mistake in the catgut sutures; and the nurse was ashamed to wed the sort of flier who, instead of flying, spent his time either sitting in the reception room of the hospital or searching the newspaper ads for places to obtain a genuine prewar truss, since Hamuras figured that such a truss would enable him to fly after all; on account of the war, however, a good truss was unobtainable.

One should note that at this juncture Professor Kouska's "to be or not to be" ties in with the history of aviation in general, and with the airplane models used by the Austro-Hungarian Army in particular. Specifically, the birth of Professor Kouska was positively influenced by the fact that in 1911 the Austro-Hungarian government acquired a franchise to build monoplanes whose rudder bars were difficult to operate, planes that were to be manufactured by a plant in Wiener-Neustadt, and this in fact took place. Now, in the course of the bidding, the French firm Antoinette competed with this plant and its franchise (coming from an American firm, Farman), and the

French firm had a good chance, because Major General Prchl, of the Imperial Crown Commissariat, would have turned the scales in favor of the French model, because he had a French mistress, the governess of his children, and on account of this secretly loved all things French; that, of course, would have altered the distribution of chance, since the French machine was a biplane with sweptback ailerons and a rudder blade that had an easily movable control bar, so the bar would not have caused Hamuras his problem, owing to which the nurse might have married him after all. Granted, the biplane had a hard-to-work *exhaust hammer*, and Hamuras had rather delicate shoulders; he even suffered from what is called *Schreibkrampf*, which gave him difficulty signing his name (his full name ran Adolf Alfred von Messen-Weydeneck zu Oryola und Münnesacks, Baron Hamuras). So, then, even without the hernia Hamuras *could* have, by reason of his weak arms, lost his appeal in the eyes of the nurse.

But there popped up in the governess's path a certain two-bit tenor from an operetta, with remarkable speed he gave her a baby, Lieutenant General Prchl drove her from his door, lost his affection for all things French, and the army stayed with the Farman franchise held by the company from Wiener-Neustadt. The tenor the governess met at the Ring when she went there with General Prchl's oldest daughters—the youngest had the whooping cough, so they were trying to keep the healthy children away from the sick one—and if it had not been for that whooping cough brought in by that acquaintance of the Prchls' cook, a man who carried coffee to a smoking room and was wont to drop in on the Prchls in the morning, that is, drop in on their cook, there would have been no illness, no taking of the children to the Ring, no meeting the tenor, no infidelity; and thereby Antoinette would have won out in the bidding after all. But Hamuras was jilted, married the daughter of a purveyor by appointment to His Majesty the King, and had three children by her, one of which he had without the hernia.

There was nothing wrong with the nurse's second suitor, Captain Miśnia, but he went to the Italian front and came down with rheumatism (this was in the winter, in the Alps). As for the cause of his demise, accounts differ; the Captain was taking a steam bath, a .22-caliber shell hit the building, the Captain went flying out naked straight into the snow, the snow took care of his rheumatism, they say, but he got pneumonia. However, had Professor Fleming discovered his penicillin not in 1941 but, say, in 1910, then Miśnia would have been pulled out of the pneumonia and returned to Prague as a convalescent, and the chances of Professor Kouska's coming into the world would have been, by that, greatly diminished. And so the calendar of discoveries in the field of antibacterial drugs played a large role in the rise of B. Kouska.

The third suitor was a respectable wholesale dealer, but the young lady did not care for him. The fourth was about to marry her for certain, but it did not work out on account of a beer. This last beau had enormous debts and hoped to pay them off out of the dowry; he also had an unusually checkered past. The family went, along with the young lady and her suitor, to a Red Cross raffle, but Hungarian veal birds were served for lunch, and the father of the young lady developed a terrific thirst, so he left the pavilion where they all were listening to the military band and had a mug of beer on draft, in the course of which he ran into an old schoolmate who was just then leaving the raffle grounds, and had it not been for the beer, they would certainly not have come together; this schoolmate knew, through his sister-in-law, the entire past of the young lady's suitor and was not averse to telling her father everything and in full detail. It appears he also embellished a little here and there; in any event, the father returned most agitated, and the engagement, having been all but made official, fell irretrievably to pieces. Yet had the father not eaten Hungarian veal birds, he would not have felt a thirst, would not have stepped out for a beer, would not have met his old schoolmate, would not have learned of the

debts of the suitor; the engagement would have gone through, and, seeing it would have been an engagement in wartime, the wedding also would have followed in short order. An excessive amount of paprika in the veal birds on May 19, 1916, thus saved the life of Professor B. Kouska.

As for Kouska the surgeon, he returned from captivity in the rank of battalion doctor and proceeded to enter the lists of courtship. Evil tongues informed him of the suitors, and particularly of the late Captain Miśnia, R.I.P., who presumably had achieved a more-than-passing acquaintance with the young lady, though at the same time she had been answering the postcards from the prisoner of war. Being by nature fairly impetuous, the surgeon Kouska was prepared to break off the engagement already made, particularly since he had received several letters which the young lady had written to Miśnia (God knows how they ended up in the hands of a malicious person in Prague), along with an anonymous letter explaining how he, Kouska, had been serving the young lady as a fifth wheel, that is, kept in reserve as a stand-by. The breaking off of the engagement did not come about, due to a conversation the surgeon had with his grandfather, who had really been a father to him from childhood because the surgeon's own father, a profligate and ne'er-do-well, had not raised him at all. The grandfather was an old man of unusually progressive views, and he considered that a young girl's head was easily turned, especially when the turner wore a uniform and pleaded the soldier's death that could befall him at any moment.

Kouska thus married the young lady. If, however, he had had a grandfather of other persuasions, or if the old liberal had passed away before his eightieth year, the marriage most certainly would not have taken place. The grandfather, it is true, led an exceedingly healthy mode of life and rigorously took the water cure prescribed by Father Kneipp; but to what extent the ice-cold shower each morning, lengthening the grandfather's life, increased the chances of Professor B. Kouska's coming

into the world, it is impossible to determine. The father of surgeon Kouska, a disciple of misogyny, would definitely not have interceded in behalf of the maligned maiden; but he had no influence over his son from the time when, having made the acquaintance of Mr. Serge Mdivani, he became the latter's secretary, went with him to Monte Carlo, and came back believing in a system of breaking the bank in roulette shown him by a certain widow-countess; thanks to this system he lost his entire fortune, was placed under custody, and had to give up his son to the care of his own father. Yet had the surgeon's father not succumbed to the demon of gambling, *his* father would then not have disowned him, and—again—the coming to pass of Professor Kouska would not have come to pass.

The factor that tipped the scales in favor of the Professor's birth was Mr. Serge *vel* Sergius Mdivani. Sick of his estate in Bosnia, and of his wife and mother-in-law, he engaged Kouska (the surgeon's father) as his secretary and took off with him for the waters, because Kouska the father knew languages and was a man of the world, whereas Mdivani, notwithstanding his first name, knew no language besides Croatian. But had Mr. Mdivani in his youth been better looked after by *his* father, then instead of chasing after the chambermaids he would have studied his languages, would not have needed a translator, would not have taken the father of Kouska to the waters, the latter would not have returned from Monte Carlo as a gambler, and thereupon would not have been cursed and cast out by his father, who, not taking the surgeon under his wing as a child, would not have instilled liberal principles in him, the surgeon would have broken off with the young lady, and—once more—Professor Benedykt Kouska would not have made his appearance in this world. Now, Mr. Mdivani's father was not disposed to keep an eye on the progress of his son's education when the latter was supposed to be studying languages, because this son, by his looks, reminded him of a certain dignitary of the church concerning whom Mr. Mdivani Sr. harbored the suspicion that

he, the dignitary, was the true father of little Sergius. Feeling, therefore, a subconscious dislike for little Sergius, he neglected him; as a result of this neglect Sergius did not learn, as he should have, his languages.

The question of the identity of the boy's father was in fact complicated, because even the mother of little Sergius was not certain whether he was the son of her husband or of the parish priest, and she did not know for sure whose son he was because she believed in stares that affected the unborn. She believed in stares that affected the unborn because her authority in all things was her Gypsy grandmother. We are now speaking, it should be noted, of the relation between the grandmother of the mother of little Sergius Mdivani and the chances of the birth of Professor Benedykt Kouska. Mdivani was born in the year 1861, his mother in 1832, and the Gypsy grandmother in 1798. So, then, matters that transpired in Bosnia and Herzegovina toward the close of the eighteenth century—in other words, 130 years before the birth of Professor Kouska—exerted a very real influence on the probability distribution of his coming into the world. But neither did the Gypsy grandmother appear in a void. She did not wish to marry an Orthodox Croat, particularly since at that time all Yugoslavia was under the Turkish Yoke, and marriage to a giaour would bode no good for her. But the Gypsy maid had an uncle much older than she; he had fought under Napoleon; it was said that he had taken part in the retreat of the Grand Army from the environs of Moscow. In any case, from his soldiering under the Emperor of the French he returned home with the conviction that interdenominational differences were of no great matter, for he had had a close look at the differences of war, therefore he encouraged his niece to marry the Croat, for, though a giaour, it was a good and comely youth. In marrying the Croat, the grandmother on Mr. Mdivani's mother's side thus increased the chances of Professor Kouska's birth. As for the uncle, he would not have fought under Napoleon had he not been living during

the Italian campaign in the region of the Apennines, whither he was sent by his master, a sheep farmer, with a consignment of sheepskin coats. He was waylaid by a mounted patrol of the Imperial Guard and given the choice of enlisting or becoming a camp follower; he preferred to bear arms. Now, if the Gypsy uncle's master had not raised sheep, or if, raising them, he had not made sheepskin coats, for which there was a demand in Italy, and if he had not sent this uncle to Italy with the coats, then the mounted patrol would not have seized the Gypsy uncle, whereupon, not fighting his way across Europe, this uncle, his conservative opinions intact, would not have encouraged his niece to marry the Croat. And therewith the mother of little Sergius, having no Gypsy grandmother and consequently not believing in stares that affected the unborn, would not have thought that merely from watching the parish priest spread his arms as he sang in a bass at the altar one could bear a son—the spit and image of the priest; and so, her conscience completely clear, she would not have feared her husband, she would have defended herself against the charges of infidelity, the husband, no longer seeing evil in the looks of little Sergius, would have minded the boy's education, Sergius would have learned his languages, would not have needed anyone as a translator, whereat the father of Kouska the surgeon would not have gone off with him to the waters, would not have become a gambler and a wastrel, would (being a misogynist) have urged his surgeon son to throw over the young lady for her dalliance with the late Captain Miśnia, R.I.P., as a result of which there would have been, again, no Professor B. Kouska in the world.

But now observe. So far we have examined the probability spectrum of the birth of Professor Kouska on the assumption that both his facultative parents existed, and we reduced the probability of that birth only by introducing very small, perfectly credible changes in the behavior of the father or mother of Professor Kouska, changes brought about by the actions of third parties (General Samsonov, the Gypsy grandmother, the

mother of Mdivani, Baron Hamuras, the French governess of Major General Prchl, Emperor Francis Joseph I, the Archduke Ferdinand, the Wright brothers, the surgeon for the Baron's hernia, Marika's otorhinolaryngologist, etc.). But surely the very same type of analysis can be applied to the chances of the coming into the world of the young lady who as a nurse married the surgeon Kouska, or for that matter to the surgeon himself. Billions, trillions of circumstances had to occur as they did occur for the young lady to come into the world and for the future surgeon Kouska to come into the world. And in analogous fashion, innumerable multitudes of occurrences conditioned the coming into the world of their parents, grandparents, great-grandparents, etc. It would seem to require no argumentation that, for example, had the tailor Vlastimil Kouska, born in 1673, not come into the world, there could not have been, by virtue of that, his son, or his grandson, or his great-grandson, or thus the great-grandfather of Kouska the surgeon, or thus Kouska the surgeon himself, or indeed Professor Benedykt.

But the same reasoning holds for those ancestors of the line of the Kouskas and the line of the nurse who were not at all human yet, being creatures who led a quadrumanous and arboreal existence in the Lower Eolithic, when the first Paleopithecanthropus, having overtaken one of these quadrumanes and perceiving that it was a female with which he had to deal, possessed her beneath the eucalyptus tree that grew in the place where today stands the Mala Strana in Prague. As a result of the mixing of the chromosomes of that lubricious Paleopithecanthropus and that quadrumanous protohuman primatrice, there arose that type of meiosis and that linkage of gene loci which, transmitted through the next thirty thousand generations, produced on the visage of the young lady nurse that very smile, faintly reminiscent of the smile of Mona Lisa, from the canvas of Leonardo, which so enchanted the young surgeon Kouska. But this same eucalyptus could have grown, could it not, four meters away, in which case the quadrumaness, fleeing

from the Paleopithecanthropus that pursued her, would not have stumbled on the tree's thick root and gone sprawling, and therewith, clambering up the tree in time, would not have got pregnant, and if she had not got pregnant, then, transpiring a bit differently, Hannibal's crossing of the Alps, the Crusades, the Hundred Years' War, the taking by the Turks of Bosnia and Herzegovina, the Moscow campaign of Napoleon, as well as several dozen trillion like events, undergoing minimal changes, would have led to a situation in which in no wise could Professor Benedykt Kouska any longer have been born, from which we can see that the range of the chances of his existence contains within it a subclass of probabilities that comprises the distribution of all the eucalyptus trees that grew in the location of modern-day Prague roughly 349,000 years ago. Now, those eucalyptuses grew there because, while fleeing from saber-toothed tigers, great herds of weakened mammoths had eaten their fill of eucalyptus flowers and then, suffering indigestion from them (the flower sorely stings the palate), had drunk copious quantities of water from the Vltava; that water, having at the time purgative properties, caused them to evacuate en masse, thanks to which eucalyptus seeds were planted where previously eucalypti had never been; but had the water not been sulfurized by the influx of a mountain tributary of the then Vltava, the mammoths, not getting the runs from it, would not have occasioned the growing of the eucalytpus grove on the site of what is now Prague, the quadrumanal female would not have gone sprawling in her flight from the Paleopithecanthropus, and there would not have arisen that gene locus which imparted to the face of the young lady the Mona Lisa-like smile that captivated the young surgeon; and so, but for the diarrhea of the mammoths, Professor Benedykt Kouska also would have not come into the world. It should be noted, moreover, that the water of the Vltava underwent sulfurization approximately two and a half million years B.C., this on account of a displacement in the main geosyncline of the tectonic formation that was then giving rise to the center of the Tatra Mountains; this formation

caused the expulsion of sulfurous gases from the marlacious strata of the Lower Jurassic, because in the region of the Dinaric Alps there was an earthquake, which was caused by a meteor that had a mass on the order of a million tons; this meteor came from a swarm of Leonids, and had it fallen not in the Dinaric Alps but a little farther on, the geosyncline would not have buckled, the sulfurous deposit would not have reached the air and sulfurized the Vltava, and the Vltava would not have caused the diarrhea of the mammoths, from which one can see that had a meteor not fallen 2.5 million years ago on the Dinaric Alps, Professor Kouska then, too, could not have been born.

Professor Kouska calls attention to the erroneous conclusion which some people are inclined to draw from his argument. They think that from what has just been set forth it follows that the entire Universe, mind you, is something in the nature of a machine, a machine so assembled and working in such a way as to enable Professor Kouska to be born. Obviously, this is complete nonsense. Let us imagine that, a billion years before its genesis, an observer wishes to compute the chances of the Earth's coming into being. He will not be able to foresee exactly what shape the planet-making vortex will give to the nucleus of the future Earth; he can compute neither its future mass nor its chemical composition with any degree of precision. Nonetheless he predicts, on the basis of his knowledge of astrophysics, and of his familiarity with the theory of gravitation and the theory of star structure, that the Sun will have a family of planets and that among these planets there will revolve about it a planet No. 3, counting from the center of the system out; and this same planet may be considered Earth, though it look different from what the prediction has declared, because a planet ten billion tons heavier than the Earth or having two small moons instead of one large, or covered with oceans over a higher percentage of its surface, would still be, surely, an Earth.

On the other hand, a Professor Kouska predicted by some-

one half a million years B.C., should he be born as a two-legged marsupial or as a yellow-skinned woman, or as a Buddhist monk, would obviously no longer be Professor Kouska, albeit—perhaps—still a person. For objects such as suns, planets, clouds, rocks, are not in any way unique, whereas all living organisms are unique. Each man is, as it were, the first prize in a lottery, in the kind of lottery, moreover, where the winning ticket is a teragigamegamulticentillion-to-one shot. Why, then, do we not daily feel the astronomically monstrous minuteness of the chance of our own or another's coming into the world? For the reason, answers Professor Kouska, that even in the case of that which is most unlikely to happen, if it happens, then it happens! And also because in an ordinary lottery we see the vast number of losing tickets along with the single one that wins, whereas in the lottery of existence the tickets that miss are nowhere to be seen. "The chances that lose in the lottery of being are invisible!" explains Professor Kouska. For, surely, to lose in that sweepstakes amounts to not being born, and he who has not been born cannot be said to be, not a whit. We quote the author now, starting on line 24 on page 619 of Volume I (*De Impossibilitate Vitae*):

"Some people come into the world as the issue of unions that were arranged long in advance, on both the spear and distaff sides, so that the future father of the given individual and his future mother, even when children, were destined for each other. A man who sees the light of day as a child of such a marriage might receive the impression that the probability of his existence was considerable, in contradistinction to one who learns that his father met his mother in the course of the great migrations of wartime, or that quite simply he was conceived because some hussar of Napoleon, while making his escape from the Berezina, took not only a mug of water from the lass he came upon at the edge of the village but also her maidenhead. To such a man it might seem that had the hussar hurried more, feeling the Cossack hundreds

at his back, or had his mother not been looking for God knows what at the edge of the village, but stayed at home by the chimney corner as befitted her, then he would never have been, or in other words that the chance of his existence hung on a thread in comparison with the chance of him whose parents had been destined for each other in advance.

"Such notions are mistaken, because it makes absolutely no sense to assert that the calculation of the probability of anyone's birth has to be begun from the coming into the world of the future father and the future mother of the given individual. Making *that* the zero point on the probability scale. If we have a labyrinth composed of a thousand rooms connected by a thousand doors, then the probability of going from the beginning to the end of the labyrinth is determined by the sum of all the choices in all the consecutive rooms through which passes the seeker of the way, and not by the isolated probability of his finding the right door in some single room. If he takes a wrong turn in room No. 100, then he will be every bit as lost and as likely not to regain his freedom as if he took the wrong turn in the first or the thousandth room. Similarly, there is no reason to assert that only my birth was subject to the laws of chance, whereas the births of my parents were not so subject, or those of their parents, grandfathers, great-grandfathers, grandmothers, great-grandmothers, etc., back to the birth of life on Earth. And it makes no sense to say that the fact of any specific human individual's existence is a phenomenon of very low probability. Very low, relative to what? From where is the calculation to be made? Without the fixing of a zero point, i.e., of a beginning place for a scale of computation, measurement—and therefore the estimation of probability—becomes an empty word.

"It does not follow, from my reasoning, that my coming into the world was assured or predetermined back before the Earth took form; quite the contrary, what follows is that I could not have been at all and no one would have so much as noticed. Everything that statistics has to say on the subject of the prog-

nostication of individual births is rubbish. For it holds that every man, howsoever unlikely he be in himself, is still possible as a realization of certain chances; meanwhile, I have demonstrated that, having before one any individual whatever—Mucek the baker, for example—one can say the following: it is possible to select a moment in the past, a moment prior to his birth, such that the prediction of Mucek the baker's coming to be, made at that moment, will have a probability *as near zero as desired*. When my parents found themselves in the marriage bed, the chances of my coming into the world worked out to, let us say, one in one hundred thousand (taking into account, among other things, the infant mortality rate, fairly high in wartime). During the siege of the fortress of Przemyśl the chances of my being born equaled only one in a billion; in the year 1900, one in a trillion; in 1800, one in a quadrillion, and so on. A hypothetical observer computing the chances of my birth under the eucalyptus, at the Mala Strana in the time of the Interglacial, after the migration of the mammoths and their stomach disorder, would set the chances of my ever seeing the light of day at one in a centillion. Magnitudes of the order of giga appear when the point of estimation is moved back a billion years, of the order of tera, back three billion years, etc.

"In other words, one can always find a point on the time axis from which an estimate of the chances of any person's birth yields an improbability as great as one likes, that is to say, an impossibility, because a probability that approaches zero is the same thing as an improbability that approaches infinity. In saying this, we do not suggest that neither we nor anyone else exists in this world. On the contrary: neither in our own being nor in another's do we entertain the least doubt. In saying what we have said, we merely repeat what physics claims, for it is from the standpoint of physics and not of common sense that in the world not a single man exists or ever did. And here is the proof: physics maintains that that which has one chance in a centillion is impossible, because that which has one chance in a

centillion, even assuming that the event in question belongs to a set of events that take place every second, cannot be expected to happen in the Universe.

"The number of seconds that will elapse between the present day and the end of the Universe is less than a centillion. The stars will give up all their energy much sooner. And therefore the time of duration of the Universe in its present form must be shorter than the time needed to await a thing that takes place once in one centillion seconds. From the standpoint of physics, to wait for an event so little likely is equivalent to waiting for an event that most definitely will not come to pass. Physics calls such phenomena 'thermodynamic miracles.' To these belong, for example, the freezing of water in a pot standing over a flame, the rising from the floor of fragments of a broken glass and their joining together to make a whole glass, etc. Calculation shows that such 'miracles' are nevertheless more probable than a thing whose chance is one in one centillion. We should add now that our estimate has so far taken into account only half of the matter, namely the macroscopic data. Besides these, the birth of a specific individual is contingent on circumstances which are microscopic, i.e., the question of which sperm combines with which egg in a given pair of persons. Had my mother conceived me at a different day and hour from what took place, then I would have been born not myself but someone other, which can be seen from my mother's having in fact conceived at a different day and hour, namely a year and a half before my birth, and given birth then to a little girl, my sister, regarding whom it should require no proof, I think, to say that she is not myself. This microstatistics also would have to be considered in the estimation of the chances of my arising, and when included in the reckoning it raises the centillions of improbability to the myriaillions.

"So, then, from the standpoint of thermodynamic physics, the existence of any man is a phenomenon of cosmic impossibility, since so improbable as to be unforeseeable. When it

assumes as given that certain people exist, physics may predict that these people will give birth to other people, but as to which specific individuals will be born, physics must either be silent or fall into complete absurdity. And therefore either physics is in error when it proclaims the universal validity of its theory of probability, or people do not exist, and likewise dogs, sharks, mosses, lichens, tapeworms, bats, and liverworts, since what is said holds for all that lives. *Ex physicali positione vita impossibilis est, quod erat demonstrandum.*"

With these words concludes the work *De Impossibilitate Vitae*, which actually represents a huge preparation for the matter of the second of the two volumes. In his second volume the author proclaims the futility of predictions of the future that are founded on probabilism. He proposes to show that history contains no facts but those that are the most thoroughly improbable from the standpoint of probability theory. Professor Kouska sets an imaginary futurologist down on the threshold of the twentieth century and endows him with all the knowledge that was then available, in order to put to this figure a series of questions. For instance: "Do you consider it probable that soon there will be discovered a silvery metal, similar to lead, capable of destroying life on Earth should two hemispheres composed of this metal be brought together by a simple movement of the hands, to make of them something resembling a large orange? Do you consider it possible that this old carriage here, in which Karl Benz, Esq. has mounted a rattling one-and-a-half-horsepower engine, will before long multiply to such an extent that from its asphyxiating fumes and combustion exhausts day will turn into night in the great cities, and the problem of placing this vehicle somewhere, when the drive is finished, will grow into the main misfortune of the mightiest metropolises? Do you consider it probable that owing to the principle of fireworks and kicking, people will soon begin taking walks upon the Moon, while their perambulations will at the very same moment be visible to hundreds of millions of other

people in their homes on Earth? Do you consider it possible that soon we will be able to make artificial heavenly bodies, equipped with instruments that enable one from cosmic space to keep track of the movement of any man in a field or on a city street? Do you think it likely that a machine will be built that plays chess better than you, composes music, translates from language to language, and performs in the space of a few minutes calculations which all the accountants, auditors, and bookkeepers in the world put together could not accomplish in a lifetime? Do you consider it possible that very shortly there will arise in the center of Europe huge industrial plants in which living people will be burned in ovens, and that these unfortunates will number in the *millions?*"

It is clear—states Professor Kouska—that in the year 1900 only a lunatic would have granted all these events even the remotest credibility. And yet they have come to pass. If, then, nothing but improbabilities have taken place, why exactly should this pattern suddenly undergo a radical change, so that from now on only what we consider to be credible, probable, and possible will come true? Predict the future however you will, gentlemen—he says to the futurologists—so long as you do not rest your predictions on the computation of maximal chances. . . .

The imposing work of Professor Kouska without a doubt merits recognition. Still, this scholar, in the heat of the cognitive moment, fell into an error, for which he has been taken to task by Professor Bedřich Vrchlicka in a lengthy critical article appearing in the pages of *Zěmledělské Noviny*. Professor Vrchlicka contends that Professor Kouska's whole antiprobabilistic line of reasoning is based on an assumption both unstated and mistaken. For behind the façade of Kouska's argumentation lies concealed a "metaphysical wonderment at existence," which might be couched in these words: "How is it that I exist now of all times, in this body of all bodies, in such a form and not another? How is it that I was not any of the

millions of people who existed formerly, nor will be any of those millions who have yet to be born?" Even assuming that such a question makes sense, says Professor Vrchlicka, it has nothing at all to do with physics. But on the surface it appears that it has and that one could rearticulate it thus: "Every man who has existed, i.e., lived till now, was the corporeal realization of a particular pattern of genes, the building blocks of heredity. We could in principle reproduce all the patterns that have been realized up to the present day; we would then find ourselves before a gigantic table filled with rows of genotypic formulas, each one of which would exactly correspond to a particular man who arose from it through embryonic growth. The question then leaps to one's lips: in what way precisely does that one genetic pattern in the table which corresponds to *me*, to *my* body, differ from all the others, that as a result of this difference it is *I* who am the living incarnation of that pattern into matter? That is, what *physical* conditions, what *material* circumstances ought I to take into account to arrive at an understanding of this difference, to comprehend why it is I can say of all the formulas on the table, 'Those refer to Other People,' and only of one formula, 'This refers to me, this is I AM'?"

It is absurd to think—Professor Vrchlicka explains—that physics, today or in a century, or in a thousand years, could provide an answer to a question so framed. The question has no meaning whatever in physics, because physics is not itself a person; consequently, when engaged in the investigation of anything, whether it be bodies heavenly or human, physics makes no distinction between me and you, this one and that one; the fact that I say of myself "I," and of another "he," physics contrives in its own way to interpret (relying on the general theory of logical automata, the theory of self-organizing systems, etc.), but it does not actually perceive the existential dissimilarity between "I" and "he." To be sure, physics does reveal the *uniqueness* of individual people, because every

man is (omitting twins!) the incarnation of a different genetic formula.

But Professor Kouska is not at all interested in the fact that each of us is constructed somewhat differently, that each has a physical and psychological individuality. The metaphysical wonderment inherent in Kouska's line of reasoning would not be diminished one jot were all people incarnations of one and the same genetic formula, were humanity to be made up entirely, so to speak, of identical twins. For one could then still ask what brings about the fact that "I" am not "someone else," that I was born not in the time of the Pharaohs or in the Arctic, but now, but here, and still it would not be possible to obtain an answer to such a question from physics. The differences that occur between me and other people begin for me with this, that I am myself, that I cannot jump outside myself or exchange existences with anyone, and it is only afterward and secondarily that I notice that my appearance, my nature, is not the same as that of all the rest of the living (and the dead). This most important difference, primary for me, simply does not exist for physics, and nothing more remains to be said on the subject. And therefore what causes the blindness of physics and physicists to this problem is not the theory of probability.

By introducing the issue of the estimation of his chances of coming into the world, Professor Kouska has led himself and the reader astray. Professor Kouska believes that physics, to the question "What conditions had to be met in order that I, Kouska, could be born?," will answer with the words "The conditions that had to be met were, physically, improbable in the extreme!" Now, this is not the case. The question really is: "I see I am a living man, one of millions. I would like to learn in what way it is I differ *physically* from all other people, those who were, who are, and who are to be, that I was—or am—not any of them, but represent only myself and say of myself 'I.'" Physics does not answer this question by resorting to probabil-

isms; it declares that from its point of view there is, between the asker and all other people, no *physical* difference. And thus Kouska's proof neither assails nor upsets the theory of probability, for it has nothing whatever to do with it!

The present reviewer's reading of such conflicting opinions from two such illustrious thinkers has thrown him into great perplexity. He is unable to resolve the dilemma, and the only definite thing he has carried away with him from reading the work of Professor B. Kouska is a thoroughgoing knowledge of the events that led to the rise of a scholar of so interesting a family history. As for the crux of the quarrel, it had best be turned over to specialists more qualified.

PAINTING LIFE INTO SAMMY

For the artist Vincent Desiderio, the subject is his critically ill son, the work an act of will.

BY ELLEN PALL

'SAVANT,' oil on canvas, 1992.

SHORTLY AFTER HIS 36TH birthday, in what he calls a Faustian trade-off, an ambitious New York painter named Vincent Desiderio was offered a rare plum: a contract for representation by the powerful Marlborough Gallery in Manhattan. At the time, driven by the critical illness of his 4-year-old son, he was spending his days compulsively painting and repainting the child's portrait. If he got it just right, he believed, somehow the boy would live forever.

Desiderio signed. Over the next 18 months, distraught, despondent, certain he had "missed the mark in every single one of the pictures," he produced a dozen works. It was a startling exhibition that went on view at the gallery in February 1993, a series of paintings so much in keeping with one another that the effect was of a suite of elaborately paneled rooms. Most were narrative paintings, and the paint, tinged with pale greens and browns, had been applied in the highly finished manner of the old masters. One huge triptych hung at the center, with half a dozen smaller triptychs here and there. These were filled with scenes of struggle and despair: a grim, naked couple flanked a desolate room; a man wept by the side of a small white coffin. Interspersed among them were several single canvases, less melodramatic but equally troubling. In "Savant" a little boy lay on a sofa with an old man, the man asleep, the boy nestled against him, radiantly awake. A long green tube snaked from a heavy tank of oxygen to the boy's throat. In "Study for a Hero's Life," this same boy lay in a hospital bed, eyes closed, mouth slightly open. A third, "Plein-Air," showed him walking alone through a sparse wood, older and, apparently, healthy. Yet even this image was mysteriously unsettling.

The show went almost unnoted by the press, though all the usual critics came to see it. Just before it closed, friends who knew Desiderio invited me there to meet him. Arriving early, knowing nothing about him except for what was on the walls, I circled the rooms a couple of times, moved by the beauty of the pictures but less and less enthusiastic about meeting the artist. What kind of person paints a sick child to create an artistic effect? And how much talent does it take to make such an image disconcerting?

My friends appeared with Desiderio: a smiling, soft-spoken man with pink cheeks, blue eyes and all the Machiavellian guile of, say, a bicycle rental clerk in rural Massachusetts. They introduced us, then swiftly drew me back to "Savant," the picture of the old man and the boy. "That's his son," one friend said, and went on to murmur a confused story about a birth defect and an operation a couple of years before. Something had gone wrong afterward, and the boy's life had been in continuous jeopardy ever since.

Desiderio rejoined us. As my friends asked after his son, Sam, I moved back a little. "Savant" now looked painfully intimate — too intimate, surely, for the artist to confront beside a stranger. But Desiderio, far from excusing himself, plunged into fluent if confounding commentary.

"This is a kind of a complicated painting," he began. "It's connected to Manet's 'Gare Saint-Lazare' — do you know it? A woman and a little girl are at a train station; the child is holding onto a gate with vertical bars. Manet loved Velázquez,

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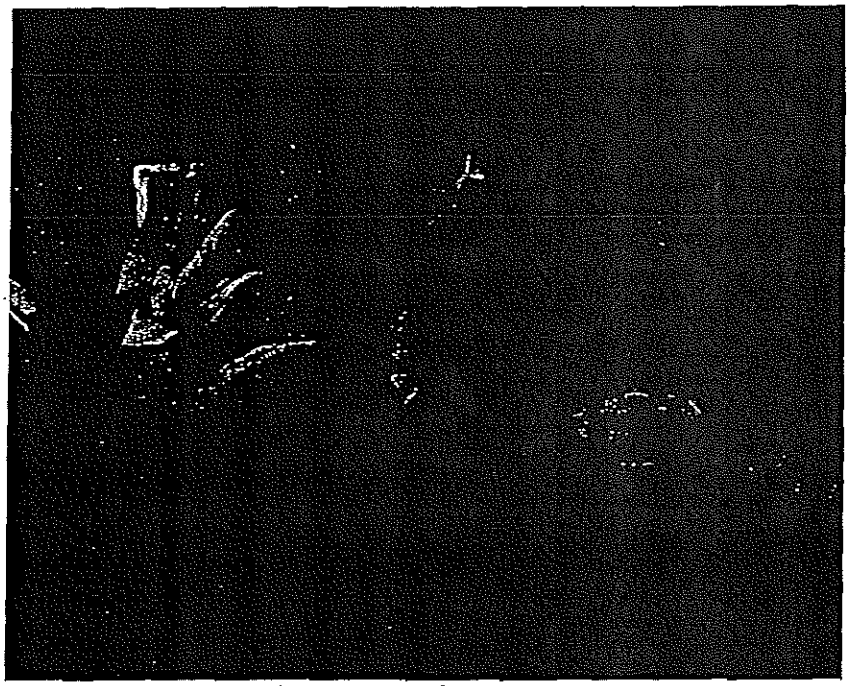
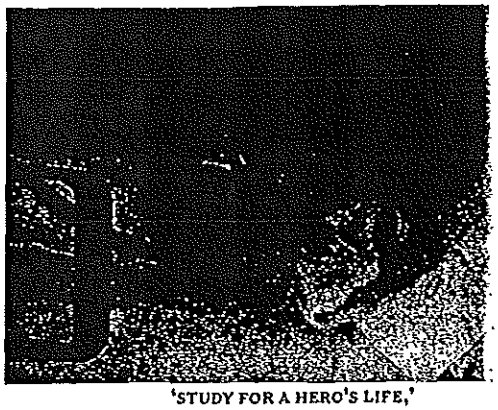
LEFT: THE MARLBOROUGH GALLERY. RIGHT: SHINGO WAKAGI FOR THE NEW YORK TIMES.



'SLEEPING FAMILY,' oil on canvas, 1990.



'STUDY FOR A HERO'S LIFE,'
oil on canvas, 1992.

and I'm convinced he painted those strong verticals in response to Velázquez's 'Surrender of Breda,' in which a row of lances makes a similar effect. I wanted to connect the two paintings with a third. In that sense, it's almost a triptych."

Desiderio pointed out a painting within the painting, a frameless row of vertical stripes above the couch.

"Here, the vertical bars became a neo-geometric painting," he resumed. "So it's Sammy and his grandfather," he said, then corrected himself at once. "Not necessarily Sammy or his grandfather; I mean, they're just characters, one young, one old, with something passing between the two. The grandfather — modernism? — is alive and healthy but looks dead. The child — third-generation abstraction — is infirm but looks very much alive. So I'm playing with the idea of third-generation abstraction supported by elaborate artificial means, i.e., art criticism," he confided. "So there's a little humor in it."

Desiderio stepped back, smiling genially, as if everything must now be quite clear, then led us to several other paintings. Each received a similar explanation. "Romance and Reunion," the enormous triptych that dominated the exhibition — which to my eye clearly concerned family, birth, the mysteries of inheritance — was, he said, about overcoming the influence of modernism. "Expulsion," the triptych with the grim couple (an especially wretched Adam and Eve, I had thought), concerned "the sterility of the aftermath of modernism." Only "Premature," a single painting of a premature infant, its head swathed in a turban of bandages, the whole bathed tenderly in Rembrandtesque shadow, escaped such explication.

"This doesn't have very much significance, this painting," the artist said. "It's nothing more than a picture of a baby."

HOW COULD DESIDERIO SPEAK SO CEREBRALly of paintings that all but punched the viewer in the chest? Between his words and his images — between his intellect and his imagination — yawned a curious gap. A downright spooky gap.

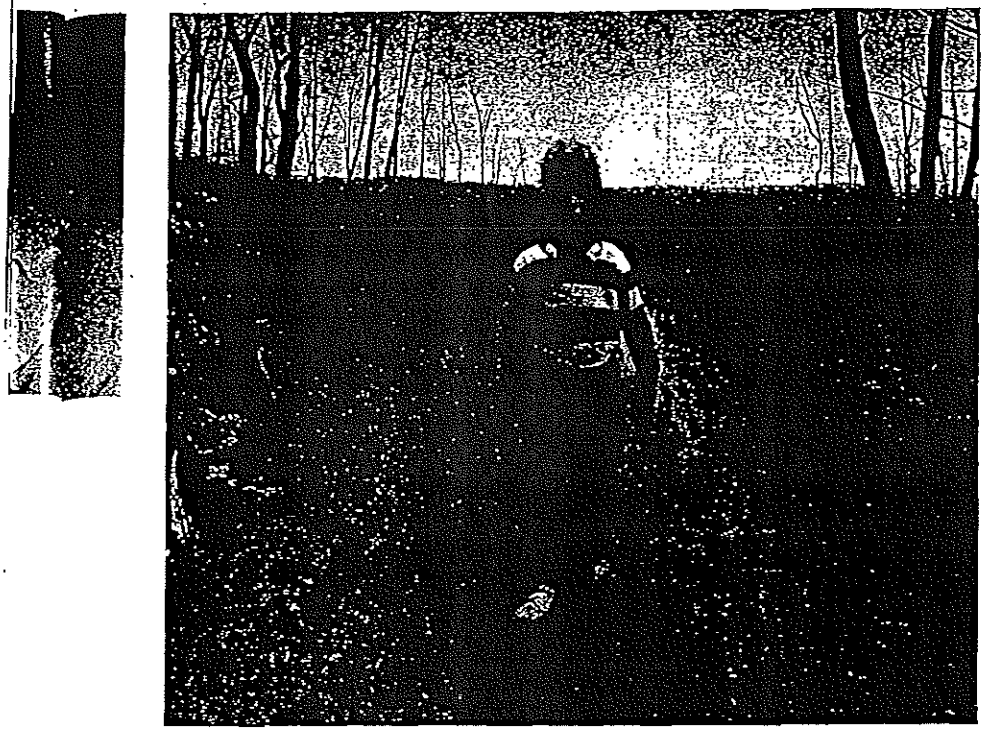
Intrigued, I met him for lunch a few weeks after the show closed at a coffee shop near his studio in Long Island City, Queens. Desiderio had grown up in a prosperous Philadelphia suburb. His parents, both children of Italian immigrants, had been reared in a poor section of Philadelphia, but his father had become a successful doctor and his mother a fashion illustrator. In third grade, while the other children drew bunnies on their Easter cards, Vincent surprised the nuns with a rendering of the Resurrection of Christ. At 12, "entranced with the Renaissance," he painted Michelangelo's "Creation of Adam" on the ceiling of the family garage.

He had had a long arts education: four years at Haverford, one in Florence, four more at the Pennsylvania Academy of Fine Arts. At Haverford he had met his future wife, Gale, a student at Bryn Mawr. They married in 1980. Three years later, thoroughly trained in accordance with all the best modernist tenets ("That you can never paint the figure again, that history is a linear process, that art is evolving," he recited), he went into the world, an abstract painter eager to follow in the revered steps of Arshile Gorky and Willem de Kooning.

DESIDERIO SLID OUT OF THE BOOTH AND LED the way to the chilly, light-filled studio he shares with two sculptors. A new triptych in its earliest stages hung on one wall. The central panel showed a middle-aged man in a tub; on a nearby hamper sat a nurse. "This painting started with a man in a bathtub being watched by an attendant," he said. "In some sense, I must have been thinking of Sammy. Because Sammy must have someone with him at all times. So if he should grow up — if he should get that old, you know — I thought about the nurse always being with him."

Sam had been born with severe hydrocephalus, water on the brain; the fluid that normally circulates in and around the brain gets trapped, pressing on the brain and distorting it. His case was worsened by an encephalocele, a hole in the head. There had been no hint of a problem until Gale abruptly went into labor at the start of her third trimester, in October 1986. She was in her last year at Cornell University Medical College. She was admitted to New York Hospital, Cornell's affiliate, and the labor was stopped with drugs. A sonogram showed the hydrocephalus. It was far too late for an abortion, so a plan was made to stave off labor until the baby's lungs were developed, then deliver him by C-section and rush him into surgery.

The odds were overwhelming. On Sam's birth, Nov. 17, the hole was discovered and repaired. He was fitted with a shunt, a narrow



'PLEIN-AIR,' oil on canvas, 1993.

tube that conducts fluid from the brain to the abdomen, where it is harmlessly released. Sam's brain had developed under such intense pressure that at birth it was no more than a thin rim pressed against the interior of the skull. Yet to everyone's amazement he began to thrive, developing on the late end of normal but doing everything babies should. Vincent and Gale, who had been warned that Sam would likely be blind, soon realized that he could see. He started to talk on schedule and grew very sociable. There were setbacks, most notably the onset of seizures. But these were controlled with medication. Sam was "the wonder kid of New York Hospital," Vincent said.

During these years, Vincent's career was beginning to take shape. For a while he had painted abstractly, working to join form and content, "to make the authentic painting" as he had been taught. He would "charge" himself up, then "attack" the canvas in search of that passionate mark that would be both peculiarly his and a continuation of the momentum of all art history before him. But he was stumped.

"The Abstract Expressionists went the farthest out on that limb you could," he said. "They developed that romantic modernist idea as far as it could be developed. They were the greatest painters, and I just couldn't get beyond them." At the same time, he felt increasingly pinched between modernism's "constant throwing out of the past" and the "incredible, meaningful experience" he had when he looked at a Delacroix or a Géricault. "Modernism says you can never go back. But why can't you?"

Desiderio became frustrated, then rebellious. Finally he staged a sorrowful, angry, exuberant mutiny. He "jumped the modernist ship" — not backward, toward the "naïve realism" of the past, but up and out "into hypermode, a poststructuralist mode," reclaiming in the process the entire legacy of Western art.

Within a year or two, he was painting vast triptychs — 10 by 25 feet was not unusual — whose scale and style alluded to the great 19th-century history painters. He intended the premodern references to remind the viewer that he or she was indeed looking at a painting; that painting, like language, is always the signifier, never the signified. He amalgamated these references with a quasi-allegorical, almost surreal imagery to construct on canvas elaborate, ambiguous polemics about art, politics or philosophy. And the art world responded. In 1987 he signed with a small SoHo gallery, Lang & O'Hara.

In these same years, Gale had finished her training at Cornell and gone on to specialize in psychiatry at New York University School of Medicine. By the fall of 1990, she was also six months into a healthy pregnancy.

One day that October, Sam became pale and lethargic, vomiting repeatedly — a symptom of pressure inside the head. By evening, the trouble was diagnosed: his shunt was blocked, a common development. By midnight, he was in surgery at New York Hospital. He emerged at around 2 A.M., his head wrapped in bandages ("like a swami," said Vincent, "like the kid in 'Premature.' "), tired and cranky, but talking. Vincent stayed with him; Gale, pregnant and exhausted, left. According to Sam's medical records, he continued to vomit as the night went on. At one point, a nurse noted in his chart that his pupils were unequal in size, a likely sign that the brain was being pushed out of place by accumulating liquid. His new shunt had failed. The pressure became so extreme that his brain herniated — was forced partly into the opening at the base of the skull where the spinal cord meets the brain stem. In the morning, the malfunctioning shunt was replaced, but the damage had been done.

"It was like someone took a cue ball and shattered our lives," said Vincent. Sam suffered several strokes. He was left paralyzed and in a coma. In the months that followed, he gradually regained consciousness, motion and speech. But his ability to breathe on his own had been compromised. His progress was slow, uncertain, studded with reversals. After what had happened, Gale and Vincent were unwilling to leave him alone for even a moment. (In 1993 they filed a malpractice suit, which is pending. New York Hospital denied the charges in court papers and has declined to discuss the case.) In mid-December, Gale gave birth to their second son, Oscar, while Vincent shuttled from her bedside to Sam's, several floors below.

At the same time, Vincent had his most successful exhibition ever — his third solo show at Lang & O'Hara. On the last day, the Metropolitan Museum of Art bought "Sleeping Family," a single canvas showing an almost aerial view of a sleeping couple, their young son between them. Soon afterward, Lang & O'Hara folded. But Marlborough stepped in, a dazzling deus ex machina.

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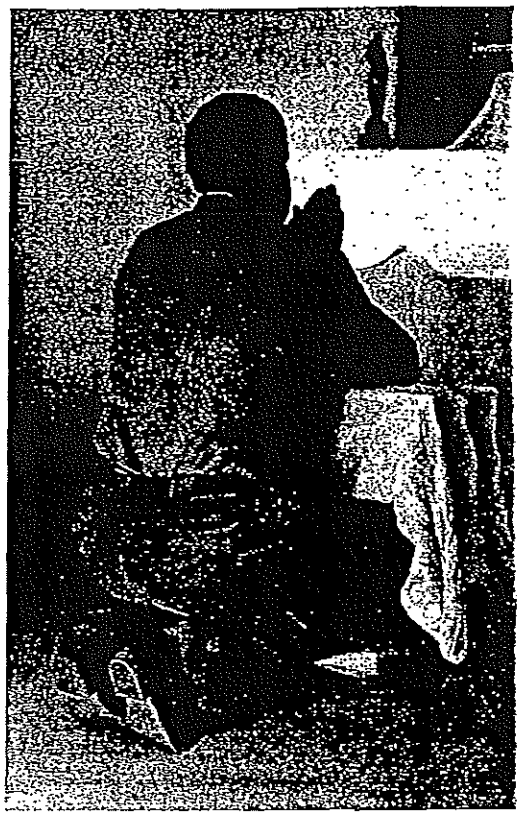
Nearly four months after his shunt became blocked, Sam was finally stable enough to leave New York Hospital for Blythedale, a children's rehabilitation hospital an hour north of Manhattan. His memory and intelligence were intact. But he had lost the automatic reflex that forces the body to breathe when respiration has been interrupted. Now when he had a seizure — and he had them often — Sam would stop breathing. A tracheostomy, a surgical opening into the windpipe, allowed quick ventilation of his lungs at such moments. But because the seizures occurred without warning — and because failure to respond immediately meant death — he needed constant attendance.

A VAST CANVAS HUNG NEAR THE BACK OF Vincent's studio, the central panel for a projected triptych. It showed a séance taking place in a darkly painted, richly furnished room.

"This was the first big triptych I tried to do after Sammy got sick," said Vincent, surveying it



doubtfully. "It's got grave problems, but I don't throw it out, because it's got certain things about it that are very beautiful.

"I started with this image of a séance, a séance in a room of history," he went on. "And these people — I thought initially they were revisionist historians trying to understand what had happened before us — instead of using scientific methods, they've allowed themselves to indulge in the supernatural, in a conjuring of the past. But it got very dark. I couldn't control it. I worked on it for seven months straight and it just got darker and darker." He pointed to a number of paintings within the painting.

"These paintings are all about women, all about sexual conflicts. This is Judith and Holofernes, by Cavallino — see, she's kind of quizzically looking out at you, and she's got the head of Holofernes that she's just cut off. And this is Jezebel, being thrown from the tower and devoured by dogs. And this is a painting by Manfredi, of Mars beating Cupid, with Venus interceding. It's a family triangle — even though Mars and Cupid aren't father and son, it has that look — and there's a kind of pact between the child and the mother to do in the father. So it's all these gender struggles, family struggles, Oedipal struggles."

Desiderio 'jumped the modernist ship' — not backward, but up and out, reclaiming in the process the entire legacy of Western art.

As at the gallery, nothing in Vincent's slightly bemused tone suggested that these images had any personal resonance, that the idea of revising history might have particular appeal to a man whose happiness had been wrecked by the events of a single night, that an ambitious man in his situation might sometimes feel he had been "done in" by his wife and child. Looking at the Manfredi painting-within-the-painting, I murmured something to the effect that, even as adults, we tend to cast ourselves as the child in the Oedipal triangle. And yet, in a very profound sense, at the time he painted the séance, Vincent had been a father.

"Yeah, well, I'll tell you, it's very intriguing to think of the relationship between Gale and me as becoming the sort of Adam and Eve relationship, where the original sin produced Sam, who had birth defects," he said abruptly. "Eventually Gale and I got much closer than we'd ever been. But there's a lot of guilt associated with——." He broke off.

"You know, he was my child and I was in the very room while he was herniating," he said. "I was in the room there with him, you know? I mean I was doing my best as a lay person to alert the staff that he was not doing well. Nonetheless, you feel, Could I have done more? But I don't know what more I could have done."

Vincent sat beside the studio's big windows and talked expansively about the tub picture ("I started thinking about the guy in the bathtub as being structuralism, this old, weak mode . . . ."), then about art in general. His mind hopped furiously from idea to idea. Socialism, Cubism, Barthes, Zola, Habermas — names and theories flew like the spray of sawdust thrown up under a whirling blade.

"There's a lot about Vincent's own life that he paints," Gale, a small, fair woman whose mild brown eyes and delicate features give her the look of a Renaissance angel, told me later. "But he very rarely will directly address that," she added. "To him, it's about some really complex, titan battle of art historical principles. You know, we talk about painting all the time. It's something we really love. And painting really is about these intellectual conversations. But sometimes you just have to tell him, 'Would you shut the hell up about that stuff?' "

IN SPRING 1992, VINCENT AND Gale, now a practicing psychiatrist, moved to Tarrytown, to be close to Blythedale. For a long time, every Friday, Saturday and Sunday, they would drive to Blythedale, take Sam home for the day and return him at night; two evenings a week, they visited him at the hospital. Sam was there more than two years before he came home for good, accompanied by a rotating staff of 24-hour nurses.

On a damp Saturday morning not long before his return, their kitchen was a picture of cozy domesticity. Gale was making brownies. Sam, who doesn't like loud noises, was next to her, nervously eyeing the mixer. Oscar was on the floor, beating the tar out of some kind of postmodern Tinkertoy.

Within minutes, Sam was standing beside me, leaning against me, holding my hands, a tall, handsome 6-year-old with tousled dirty-blond hair and rebellious front teeth. The strokes affected his balance and he cannot stand unsupported. His appearance — a bit off, a bit shaky — might have disconcerted me if my eyes had not been prepared by the paintings.

"What's your name?" he demanded, though we had just been introduced. His ability to reason and remember are good, but the anticonvulsants that control his seizures make him groggy; the stroke damage makes it difficult for him to express his thoughts. I hadn't been in the house half an hour before he kissed me, the first of many kisses.

"He used to be this really brash, bubbly little devil. Now he's more weepy and lovey," Gale said later. "I think he feels a lot of this is his fault. That's why he's so kissy and apologetic."

"Sam's had to deal with things most of us never have to deal with," Vincent says. "But he's learned to cope by expressing affection for his tormenters. It almost reminds me of the way hostages adopt the philosophical views of their captors."

Sam and I discussed the color of my sweater (lavender) and the noise of the mixer (mean). With a curiously intimate gesture, he showed me a small plastic figurine clutched in his hand.

"That's actually a Ghostbuster, I think," Gale told me.

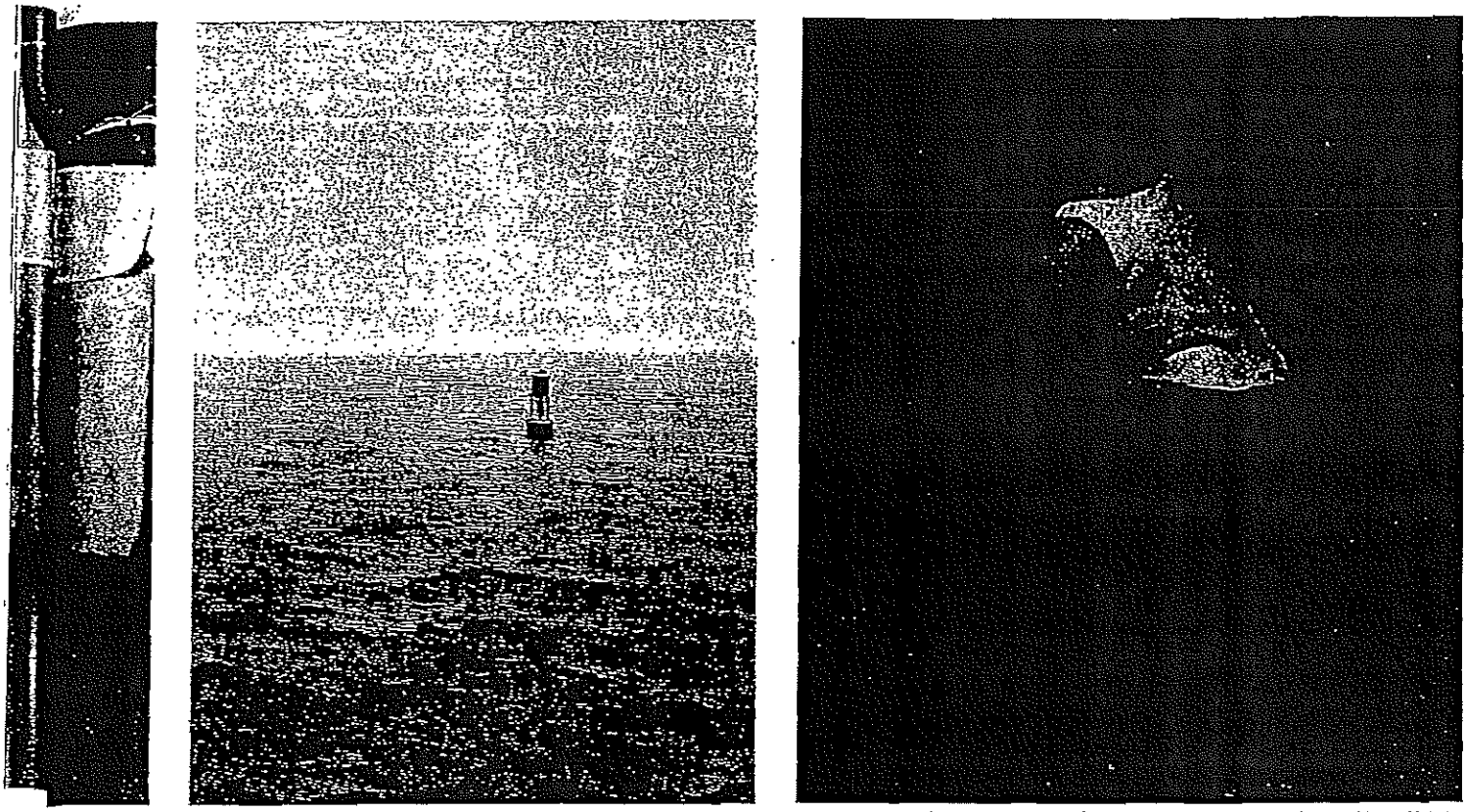
"He isn't a Ghostbuster," objected Sam.

"Who is he?"

"He is Dad."

Later, Vincent put Sam to bed for a nap. He undressed him and injected several medicines into his gastrostomy tube, which runs from a surgically created opening near Sam's waist directly to his stomach. Unable to swallow since the herniation, Sam receives all his nourishment through this tube. In all the turmoil, he had not yet been toilet-trained, so Vincent changed him. Then, with a green tube like the one that winds through "Savant," Vincent hooked him up to a supply of humidified air mixed with oxygen. He poured out a liquid food and turned on a pump to propel it into the gastrostomy tube. Then he attached a monitor to Sam's toe; if his oxygen level dipped, it would sound an alarm. Then Vincent kissed him.

Gale was raised a Quaker and has continued as an adult to attend Quaker meeting. But for a year after the herniation, she stopped. "People always say to me, 'How did you survive it?' "



'UNTITLED LOSS,' oil on wood, oil on canvas mounted on wood (triptych), 1991.

she said, late that afternoon. 'But you don't have a choice, because you don't die."

TWO WEEKS LATER, VINCENT SAT IN HIS STUdio with a stack of slides and catalogues. He had often painted Sam before the Marlborough show, but in the earlier pictures, the boy was clearly a symbol among symbols — for example, a priest raised a baby aloft rather than the Host. It was Sam, all right, but there was none of the agonized rendering of him so evident in the Marlborough show. But why not? Some of these earlier pictures had been painted just after his birth, before his unexpected recovery.

When Sam was first born, Vincent explained, "there was an opportunity for denial, and we took advantage of it. We were never sure whether he understood us, whether he saw or didn't. He was like an abstract painting. You could develop any text for him. And that's what we did.

"But when he got sick and we had to be there and he was dying and — oh, this wasn't expected to happen! And that we couldn't deny."

Sam's sickness "infiltrated the imagery" of Desiderio's work: "He became a pure symbol, a metaphor for a damaged legacy."

Vincent tried to pray just after Sam herniated. "But it didn't last," he says. "It seemed the more I prayed, the worse he got." Instead, he began to paint Sam, beginning with "Study for a Hero's Life." "I started — it's sick, but I was kind of screwed up at the time." His voice dropped to a hoarse whisper. "I was doing that painting, of him in the hospital, and he kept getting sicker and sicker. I stopped work on that picture, turned it to the wall, and he started getting a little better. And I started thinking, Oh my God, there's something wrong with this picture. So I started the painting of him walking" — "Plein-Air" — "because I thought, If I do this, he's going to get better. At the back of my mind, I knew it wasn't real, but there was something delusional about all this."

Obsessed with the notion of making the painting "be Sam," making "the signifier touch the signified," Desiderio tried desperately to compress the two. "But it was impossible, impossible, impossible. ..." A moment later: "Oh, it's so stupid!" he burst out. "What could be more naïve? But the agony of this picture for me was trying to paint it knowing it was only a painting.

"I guess by painting him I had this idea that I could keep him alive forever," he continued. "And this sort of crazy idea that if I painted him walking, he would walk again. You know? If I made it just right. ... Crazy. Desperation."

It occurred to me that the Marlborough show had developed under a pressure no less intense, perhaps, than the pressure on Sam's unborn brain. And that Vincent had painted it was nearly as astonishing as Sam's having thrived.

SAM, NOW 8, HAS SETTLED IN AT HOME AGAIN. He knows all his letters and can sound out words, though fluent reading still eludes him. He has also learned to use the bathroom. Hoping it would stop the seizures, his doctors recently put him on a high-fat diet. His seizures are less frequent, but they have not stopped. Gale is pregnant again. The baby is due in May.

ONE OF VINCENT'S FAVORITE PAINTINGS from the Marlborough show is a triptych called "Untitled Loss." The left panel shows a man at prayer, the right a man picking up a weapon in anger. In the center, a red buoy floats on a dark sea.

"A painting like this," he said one day, gazing at a reproduction, "at its core, there's a total involvement with the unknowable." One man converts his uncertainty into faith, the other into violence. But "abdication of one's will to religion, or this gesture of violence when you don't know what you're raging against, these are both very superficial gestures," Desiderio said. "And you see, their backs confront you; they stop your vision almost at the surface of the pictures."

But in the center "is this dimensionless sea, defined by a single marker. And your eye wants to go beyond the page, wants to go deep in. It's as if in this nothingness, only our action defines — It's an existential thing; there's the void and the action in the void." He talked on for some minutes in such terms, then broke off as if suddenly weary. "I don't know," he said. "I don't know. That's why it's called 'Untitled Loss.' " ■

By Ian Frazier

DATING YOUR MOM

NOBODY BETTER,
BETTER THAN NOBODY

NOBODY BETTER, BETTER THAN NOBODY

IAN FRAZIER

Farrar · Straus · Giroux

NEW YORK

Nobody Better, Better Than Nobody

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Poncé Cruse Evans, the woman who writes "Hints from Heloise," the syndicated household-hints column that appears in more than five hundred newspapers in twenty countries, has a cute nose and a cute smile and a strong chin that precedes her into confrontations with people who smoke in elevators and dry cleaners who ruin good silk blouses. On television (she often appears on talk shows, and forty-seven TV stations around the country use her minute-long household-hints tapes), her luxuriant head of completely gray hair catches the eye. She is only thirty-one years old. Her hair started turning gray when she was twelve, and she thinks that worry about her mother, who had many illnesses and died in 1977, made it turn grayer faster. Her gray hair and young face add to the

confusion of people who expect her to be older and who are also not clear on the difference between her and her mother. Poncé's mother, Heloise, founded the column in 1959. Poncé began to write for the column occasionally under the name Heloise II in 1975, took over the column in 1977, and dropped the "II" in 1978. Her full name is Poncé Kiah Marchelle Heloise Cruse Evans. Poncé (pronounced *Pahn*-see) was the nickname of her paternal grandmother, Florence; it does not appear in the Dictionary of Common English First Names. Kiah is short for Hezekiah, a name of several uncles on her father's side. Marchelle comes from her father's first name, which is Marshal. Heloise is from her mother. Cruse was Poncé's last name before she married. Evans comes from her husband of two years, David Evans, a plumbing contractor.

When Poncé tells a story about a phone call between her and Joseph D'Angelo, the president of King Features Syndicate (her column makes more money than any other at King Features), she holds her right hand to her ear with index, middle, and ring finger bent and little finger and thumb extended, to represent a telephone. When she wants to express strong aversion, she closes her eyes, raises her thick, dark eyebrows, and turns the corners of her mouth down. When she describes how wonderful certain recipes are, she presses both hands to her breastbone, fingers spread. When she is mortified with embarrassment, she flops her head over onto the arm of the chair she is sitting in and stays like that for a minute

or so. When she is having trouble with a door that is supposed to open inward but is stuck, she gives it a solid shot with her hip, like a basketball player throwing a hip check. When she realizes that someone she has just met is attempting a joke at an unexpected point in the conversation, she does a mild double take and then looks at the person as if the person were a common household object suddenly revealing a new and different use. Her regard is unusual, because whatever she looks at she looks at with one eye at a time.

"I'm an alternator," Poncé says. "That means I see with alternate eyes. I have no binocular vision and very little depth perception. Sometimes it freaks people out who ride with me, because I stay so far away from other cars, just to be on the safe side. I was born with a severe astigmatism. I'm talking about *kabongas!* My eyes were so crossed all you could see were the whites. When I was born, my mother was in labor for thirty-two hours, and the doctors said that maybe the pressure on my skull was what caused the condition. I had six operations to correct it. My mother promised God that if my astigmatism was cured she'd tithe her income to the blind, and He must've liked the deal, because the operations worked. Even today, ten to fifteen percent of the income from her estate goes to purchase Braille typewriters for children who cannot afford them. When I was on my book tour in Washington last April, I passed the hospital where I had the operations. I will always remember being in

that hospital with my eyes bandaged shut, feeling totally vulnerable. When someone comes into the room, you don't know whether they've come to give you a shot, take your temperature, or give you ice cream. Listening to the hospital sounds—the cart rolling down the hall, cla-*klunk* cla-*klunk;* the bottles on the cart rattling; squeaky nurses' shoes; the sound effects of the cartoons on TV, like that weird bongo noise feet make when the guy runs; the sound of scissors cutting away tape. In the movies, they always show the doctors and nurses standing around the bed when they cut the bandage from the patient's eyes, but to be on the inside is really worse. It's probably because of that that I've had such acute hearing my whole life."

Poncé imitates sounds all the time when she talks. For example:

kneehhhh—Her hair dryer stuck on its lowest speed when she has just washed her hair and has to go on TV in half an hour.

sploof!—Baking soda coming out of the box all at once.

swt swt swt—Her mother making an abstract oil painting, applying the paint with clips from her hair.

ch-ch-ch-ch-ch-ch—Chinese people chopping vegetables.

chop chop chop—Americans chopping vegetables.

klonk! klonk!—Her father, six-two and two hundred pounds, taking a shower in a tiny shower stall with metal sides.

plunk!—Her pet macaw, Rocky, after being sprayed with a hose, falling from a tree where he had flown in an escape attempt.

ghhich!—Her father when he realized that the pilot of the plane he was boarding was a five-foot-tall woman.

Poncé lives outside San Antonio, Texas, and not long ago I drove down to see her and her husband. From Chicago to San Antonio, the road is basically one big strip. In Illinois, I passed a motor home with a large metal nameplate on the back saying *The Humberts.* When the combined Interstates 55 and 70 cross into Missouri at St. Louis, there is no sign on the bridge identifying the river underneath as the Mississippi. In Muskogee, Oklahoma—"a place where even squares can have a ball," according to Merle Haggard—I saw a Taco Hut, a Taco Bell, and a Taco Tico.

I drove around San Antonio for a long time looking for a motel. I wanted a locally owned one—the kind of motel that was built in the days when people thought owning a motel was a good way to get rich. Loop 410, the freeway that goes around San Antonio, is a circuit of more than fifty miles. The only motels I saw were the ones you usually see. Finally, driving around the side streets of a neighborhood sliced through with freeways near the center of the city, I saw out of the corner of my eye a motel that I will call the Miramar Motor Inn. I had seen no signs advertising it. It was on a street that dead-ended at a

fence along a freeway. On one side of the street it had many rooms in cinder-block buildings surrounding a large parking lot, and on the other side of the street it had other buildings and more rooms. I went in and registered, and after the woman behind the counter took my money she asked, "How did you find out about this motel?"

I had not been in Texas long before I started having millions of insights about the difference between Texas and the rest of America. I was going to write these insights down, but then I thought—Nahhh.

Poncé's mother, Heloise, was born in Fort Worth, Texas, on May 4, 1919, to Mr. and Mrs. Charles Bowles. She and her sister Louise were identical twins. Heloise's mother was herself an identical twin, and the day on which her daughters were born also happened to be her own birthday. As a girl, Heloise liked to rub empty spools on the soap when she was in the bath, and blow bubbles from the hole in the center of the spool. She was interested in the Orient—an interest encouraged and shared by her mother, who gave Heloise and Louise matching Chinese cedar chests for their sixteenth birthday. Heloise went to public school in Fort Worth, and she was the only girl in her high school to take shop class, and she got an A in it. She also took private lessons in smoking, to learn how to smoke a cigarette glamorously. She attended the Texas School of Fine Arts in 1938, and in

1939 she graduated from the Felt and Tarrent Business College and also from Draughn's Business College. In 1940, she married Adolph Risky, an Air Corps pilot. After two miscarriages, she thought that she could not have children, so she and her husband adopted a son, Louis. She and her son stayed in Texas when her husband went off to war. In 1943, he was shot down over Europe. Heloise received a flag and his medals in the mail, but she did not have enough money to go to Cambridge, England, where he was buried. (Thirty years later, on her only trip to Europe, she did visit the grave.)

In 1946, at a party in Fort Worth, Heloise met Marshal (Mike) Cruse, a captain in the Army Air Forces. He asked her out, and on their first date they went target shooting. They were married three weeks later, and they honeymooned in Mexico. Early in 1948, she and Louis went to join her husband in China, where he had been stationed. First, they lived in Shanghai and then they lived in Nanking. Heloise was both thrilled and horrified by China. In her book *Heloise in China*, written in 1948 (published in 1971), she said, "There are no words in the dictionary to describe this country and its people." She visited Peking, which she thought was the most beautiful and mysterious city in the world. Outside the wall of the Forbidden City, she saw many Communist students machine-gunned by Chinese Nationalist troops. She managed a household without a stove or heat or running water. She used rice water for starch, beet juice

to dye clothes, and cabbage to clean rugs. She shot a .22 rifle to scare away Chinese people who broke down the bamboo fence around her house and began stealing clothes off the clothesline. She and her husband became friends with their upstairs neighbors, Major Les Garrigus and his wife, Helen, who were also from Texas. One day, Helen and Heloise made one huge Texas state flag and two smaller ones and hung them on the house, causing people to wonder what new embassy that might be. Another time, Helen and Heloise were going shopping and they saw a Chinese man raping a goat. This became a running joke between the couples, and in later years whenever they called each other long-distance they began the conversation by saying "Baa-baa-baa."

The Cruses left China in 1948, before the Communists took over, and moved to Waco, Texas, near where Captain Cruse was stationed. In the first five years of her second marriage, Heloise became pregnant five times. She always knew she was pregnant when she felt a strong urge to go out in the yard and suck rocks. All those five pregnancies ended in miscarriages. Finally, after a difficult pregnancy and a difficult labor, she gave birth to Poncé, on April 15, 1951. The Cruses moved from Waco to Arlington, Virginia, in 1953, and in 1958 they moved to Hawaii. In 1958, Heloise and her husband went to a party of Air Force people where everyone outranked them. The conversation turned to different ways to supplement service pensions after retirement. Heloise said

that she would like to write a column in a newspaper to help housewives. A colonel laughed in her face and bet her a hundred to one she couldn't get a job on a newspaper. Heloise had some engraved calling cards made, and then she dressed in her best suit, with matching purse, hat, shoes, and gloves, and she went to the office of the *Honolulu Advertiser* when she knew the editor was out to lunch. She made sure she created quite a stir, and she left her card. Two days later, she went back, and this time a secretary gave her an appointment to see the editor. Heloise often dyed her hair offbeat colors; for the appointment she sprayed her hair silver. The editor asked her if she could type, and she said no. She told him her idea for a column and offered to work for free for thirty days. The editor decided to give her a chance, and she soon began a column called "Readers' Exchange."

At first, the column offered both practical and personal advice, but after a while the household hints that the column printed attracted the most attention. Once, Heloise printed a hint from a reader which said that Sanford's X-it, an ink eradicator, would remove banana-leaf stains, and all the Sanford's X-it in Hawaii sold out and a fresh planeload had to be flown in. Another time, she said that Hershey's cocoa butter was good for soothing rough hands, and the same thing happened. After the Honolulu *Advertiser* had been running the "Readers' Exchange" for less than three years, its circulation was up forty percent, and the editor said that it was mostly because of her. *Time*

printed an article on her and her column in June of 1961, and Elwin Thompson, the editor at King Features Syndicate, saw the article and suggested to Heloise that she go into syndication. In September of 1961, King Features began to distribute "Hints from Heloise" nationally, and by April of 1962 the column was appearing in a hundred and fifty-eight papers. Her readership was so enthusiastic that when she offered free to anyone who asked for it a booklet about laundry that she had written she received two hundred thousand requests—the largest delivery of mail to an individual in the history of Hawaii. In November of 1962, she published her first book, *Heloise's Housekeeping Hints*. Early in 1963, the Cruses moved back to Arlington, Virginia. In October of 1963, Heloise published her second book, *Heloise's Kitchen Hints*. In 1964, at the Waldorf-Astoria Hotel, she received the Silver Lady award from an association of communications executives called the Banshees, in recognition of her achievements as a columnist. By the end of 1964, her column was appearing in five hundred and ninety-three newspapers, in America and foreign countries. The colonel who had laughed at her at the party in Hawaii wrote to her and asked how he could get a job.

For a long time, Heloise and her husband had been looking for a place to move after he retired. They wrote to chambers of commerce and considered many cities all over the country. They wanted a place with a good climate, low cost of living, good military hospitals, and good mail service. San Antonio won out, and in 1966 the Cruses moved into a five-room apartment on Broadway, eighty blocks from downtown. They also rented an adjoining two-bedroom apartment, converted it into an office, and knocked out a wall in a closet so Heloise could go back and forth easily. The San Antonio *Light*, a newspaper that carried Heloise's column, sent a reporter named Marjorie Clapp to do a story about Heloise soon after the Cruses moved. Marjorie Clapp mainly wrote stories about medical science, and she was unhappy to be assigned to a celebrity interview. When she arrived at Heloise's apartment, she noticed that Heloise was barefoot and had blacked out several of her teeth with some kind of black gum. She also noticed that the closet that led to Heloise's office still had clothes hanging in it, and to get through she had to push the clothes aside. Marjorie Clapp was not surprised by Heloise's strange appearance or bowled over by Heloise's celebrity, and that pleased Heloise, and the two went on to become close friends. Not long after the Cruses moved to San Antonio, Heloise and her husband divorced. In December of 1970, Heloise remarried; her third husband was A. L. Reese, a Houston businessman and widower, whom she met while doing volunteer work with the Optimist Club. Heloise did not want to move to Houston, and Mr. Reese did not want to move to San Antonio, and so they divorced, and Heloise went back to calling herself Heloise Bowles, her maiden name.

Heloise had health problems her whole life. In addition to having seven miscarriages, she had a growth in her stomach (it was successfully removed), a disease of the heart carried by pigeons, tic douloureux (a nervous disease involving severe facial twitching and pain, sometimes leading to loss of consciousness), arteriosclerosis, and a cracked vertebra, suffered when a car she was riding in was struck by a drunk driver. (After the accident, Heloise sent state legislators letters printed on little Japanese fans saying that they should pass stricter laws against drunk drivers.) At one point when Heloise was very sick, Dr. Denton Cooley, the famous Houston heart specialist, told her he could help her if she agreed to stop smoking, and she said she just couldn't, and he said, "Then I can't help you," and walked out of the room. She planned her funeral over several years, with the help of Mr. and Mrs. Lelon Cude, a couple she met at a party. They visited many cemeteries shopping for burial plots. The Cudes (who owned a funeral parlor themselves) later remembered that at one cemetery she told the director in detail how to get rid of the anthills. She had picked a site, and had a tombstone carved and set up, by 1975. The tombstone read *Heloise, Every Housewife's Friend.* She died December 28, 1977, and was buried in a red silk Japanese wedding robe, which she had always worn on New Year's Eve. At her funeral, each mourner was given a long-stemmed red carnation, and a friend, Mrs. Paul Loomis, sang "There Are No Phones to

Heaven"—a song written and copyrighted by Heloise. Several obituaries recalled that she had liked unusual hair coloring, and these ended with a quotation taken from an official biography distributed by King Features Syndicate: "I just can't abide a dreary look, and when I wear a blue dress and blue shoes, why I'm going to have blue hair."

Poncé told me how to get to her house: "Come out San Pedro past the airport, which you can't miss because the planes land practically right on top of your car, get off at the Bitters Road exit, go left under the overpass, go straight through the light (if it's green, of course) . . ." I liked the last instruction, because it reminded me of the generous specificity of many of her household hints. For example, a hint telling how to polish sterling-silver bracelets by rubbing them on wool carpeting begins, "Remove the bracelets from your arm." Before I went, I put on a new pair of socks. These socks came on a sock hanger. This sock hanger was a single piece of molded silver plastic, about three and a half inches long and an inch and a half high. Essentially, it was a little clip with teeth to grip the socks and a hook at the top so the socks could hang on display at the store. It looked somehow special to me. I put it in my pocket and took it with me. When I was sitting in Poncé's living room talking to her, I remembered I had it, and I showed it to her.

She reacted like an Audubon Society member spotting an indigo bunting at her bird feeder. "Aren't those *neat*? You can do lots of things with those. They make great tie hangers or clothespins for dainty items like lingerie or clips to keep potato-chip bags shut after opening. You can clip matching socks together when you dry them (on medium heat), and that saves having to match socks later. Kids like 'em for clothes hangers for Barbie Doll clothes. This is the good kind, too—the teethy kind."

The good kind. Poncé knows that there are sock hangers without teeth, sock hangers of light-gauge plastic which break easily, sock hangers that are only a plastic ring with a tab that goes through the socks. She knows that the heavier-gauge sock hangers with the teeth—functional, eye-pleasing in design—are the good kind. Poncé knows about sock hangers because it is her job to know. Poncé's mother believed that homemakers were "the precious backbone of the world," and she saw significance in the smallest detail of a homemaker's life. Her vision, as she expressed it in her column, was so powerful that it gave her name a status bordering on the official. To many people, Heloise is a name like Aunt Jemima or Betty Crocker, and they are surprised to find out that there was an actual woman named Heloise. Poncé inherited not only her mother's name and her mother's column but also the vision that her mother shared with millions of readers. For most of the history of the column, about eighty percent of the hints have been ones sub-

mitted by readers (and tested by the "Hints from Heloise" staff). So many people participate in the column that the question of authorship is fuzzy: some hints readers send in, some Poncé thinks of, some her mother first came up with twenty years ago. But every hint is like another facet on the same crystal: "Hints from Heloise" will pick one item from the stream that sluices through our lives and then spotlight it, put it on a dais, examine its essence. A rubber crutch tip; a back scratcher; a skin-diving mask and snorkel; toy handcuffs; rubber fruit-jar rings; a shish-kebab skewer; a birthday-candle holder; a bowling-shoe bag; a nylon pastry brush; a Worcestershire-sauce bottle; a toy carpet sweeper; the skinny jar that olives come in; aquarium paint; a glass-doored china hutch; a thick book; a dresser scarf; the little piece of cork inside a soda-pop bottle cap; the square piece of sticky paper that covers the holes on a can of cleanser; a long-handled snow brush; a baby-food jar with a screw-type cap; a wire bicycle basket; a spice-bottle top; half a yardstick; the little circles of paper made by a hole puncher; a toy wagon. "Hints from Heloise" shows that these items are other than they appear. A back scratcher is perfect for cleaning the crevices behind the lint trap in an electric clothes dryer. Two rubber fruit-jar rings placed under an ice tray will prevent the tray from sticking to the bottom of the freezer compartment. Toy handcuffs can keep the cabinets under the kitchen sink shut, so crawling infants won't get into them. Thick books can weight down a towel

blotting a stain from a carpet. If you wear a skin-diving face mask and snorkel when you peel onions, you won't cry.

When people complain that a hint in "Hints from Heloise" is sometimes more trouble than the problem it is intended to solve, they forget that just by naming the problem Heloise already has the battle practically won. Before "Hints from Heloise" noticed it, the problem of rump-sprung knit suits existed in the limbo of real but unnamed things. The problems of soiled artificial flowers, soggy undercrust, leaky milk cartons, sour dishrags, girdle stays jabbing, meringue weeping, soda straws sticking out of bag lunches, shower curtains flapping out of the tub, creases in the middle of the tablecloth sticking up, wet boxes in the laundry room, roach eggs in the refrigerator motor, shiny seam marks on the front of recently ironed ties, flyspecks on chandeliers, film on bathroom tiles, steam on bathroom mirrors, rust in Formica drainboards, road film on windshields—all were acknowledged and certified, probably for the first time ever, in "Hints from Heloise." Heloise was the first to call attention to the problem of unevenly distributed curtain gathers. Heloise observed that some things stick: zippers; car doors; bureau drawers; gum in kids' hair; toast in the toaster; plastic placemats to the tabletop; pieces of bacon to one another; one drinking glass inside another; envelopes to one another in humid weather. Other things slide: clothes to one end of the clothesline; purses and bags of groceries off car seats;

deviled eggs to one end of the serving tray; quilts off the bed; honeydew melons off the plate; sewing-machine foot controls across the floor; dog bowls across waxed kitchen floors; slipcovers off chair arms; sofa sections apart. "Hints from Heloise" noticed places that no one had officially noticed before: behind the radiator; under the bottom of the blender; between the door runners of sliding glass shower doors; between the little ridges on the bathroom scale; between the washing machine and the wall; between the stove and the countertop; where the grout meets the bathtub; where the carpeting meets the baseboard.

The intelligence at work in "Hints from Heloise" is confident. It likes to begin sentences with "Never," or sometimes with "*Never*" or "Never ever" or "Never, never, never" or "Don't ever, and I mean ever": "Never put any hot food into your freezer. . . . Never take anyone with you when shopping if you can possibly help it. . . . *Never* make one piecrust at a time. . . . Never walk down a long hall more often than necessary. . . . *Never* clean a closet or drawer when you are not angry or in the throwing-away mood. . . . Never walk into a room you are going to clean without a paper sack. . . . Never buy cheap paint for the kitchen. . . . *Never* wash windows when the sun is shining on them. . . . *Never* soak clothes over ten minutes. . . . Never iron a dish towel. . . . Never use bleach on treated cottons. . . . Never use scouring powders or bleaches on plastic cups. . . . *Never* sit, lie, or stretch out on concrete (that's cement) in any type

of elasticized bathing suit. . . . Never buy shoes in the morning, because your feet *can* stretch as much as a half size by the afternoon. . . . Never put a rubber band around silverware. . . . Never use a perfume spray near silver, as perfume can mark it. . . . Never use ammonia on a mustard stain. . . . Never, never overwater a philodendron. . . . Never fill a dish to capacity. . . . Don't ever, and I mean ever, put hot grease down your sink drain. . . . Never, never, never use liquid dishwashing detergent in your clothes-washing machine. . . . Never run out of potatoes."

Although Heloise may congratulate herself and her readers for being "real smarties," she never wants to be mistaken for an intellectual. "I am no great brain, just a neighbor and friend," Heloise says. Sometimes the mathematics in the column seem to consist of one, two, three, four, five, six, seven, eight, nine, ten, eleven, a dozen, a bunch, two dozen, a whole bunch, oodles, umpteen, and a zillion. (Poncé, a business minor and a math major in college, once did a physics project on the rate of water loss from a dripping faucet and its effect on water bills. She is in fact very comfortable with numbers.) With its fondness for words like "thingamajig" and "doohickey," the column sometimes seems like the bright girl in class who hides her intelligence so people won't resent her; and, also like the bright girl, the column occasionally slips and uses a precise and abstruse word. Usually, it's a word that has to do with sewing, like selvage (the little strip at the edge of a piece of fabric which is of a

different weave to prevent raveling) or rickrack (a flat braid woven in zigzags and used as a trimming) or flatfelled (sewn by placing one folded raw edge over the other and stitching on the wrong side, like the inside seam of a bluejean leg) or gimp (the round cord used as trimming on furniture).

Time has many rewards for regular readers of "Hints from Heloise." One year, Heloise discovers that a soap-filled steel-wool pad kept completely underwater will not rust for as long as two weeks. Several years later, with an intuitive leap, she discovers that rust on the cut side of lettuce leaves can be prevented the same way. One year, Heloise has a hint for "those of you troubled with 'lines' on husband's shirt collars" or for "women who complain about nylon slips clinging to their bodies." Years later, the problems of "ring around the collar" and "static cling" turn up on television. Heloise's readers never know when a simple one-paragraph hint in the column will predict a multimillion-dollar project involving soap-company executives, advertising writers, and TV-commercial directors, technicians, and actors.

In its early days, the column combined its hints with many encouraging words for housewives. Heloise not only noticed her readers' problems but also believed that her readers' husbands and children probably did not. She sometimes called her readers "my precious ladybugs," and she often ended the column "God bless you." Occasionally, out of the blue, she would say something that admitted how unreward-

ing the life of a housewife can be. She ended one hint about spring cleaning with the observation "All the furniture polish in the world won't put a gleam in your husband's eyel" When Poncé took over the column, she figured that homemakers were no longer only housewives but might also be men, grandparents, or even children, and she enlarged the column's focus to include them. "My precious ladybugs" disappeared. As if to compensate for the loss of that old camaraderie, Poncé made the column much more down-home and folksy. Expressions like "Golly whoopers" and "Doggone and heck a mile" multiplied. She also put more emphasis on consumer advocacy and consumer safety. Poncé is less shy than her mother was, and she decided, with newspapers folding under her at an unpleasant rate, that it might be a good idea to be on television. Over all, though, the column under Poncé and the column under her mother have been alike in more ways than they have differed. Nylon net—the product for which the first Heloise found so many uses that it is closely linked with her in the minds of many people—continues to divulge new applications. So does baking soda. So does vinegar—a substance that Poncé feels so strongly about that she flew to San Francisco to address the Vinegar Institute three days after her wedding. Poncé's mother thought that nylon net, baking soda, vinegar, and kerosene were the most important household aids of all. Poncé agrees, although she might replace kerosene with prewash laundry spray, since kerosene is now hard to find and pre-

wash spray, a recent product, has a large number of uses, from removing bumper stickers to cleaning Naugahyde. She thinks she may write a book called *Nylon Net, Baking Soda, Vinegar, and Prewash Spray.*

After the first Heloise realized how powerful her column could be, she decided never to mention brand names. The second Heloise follows this rule. She calls Kleenex "facial tissue," Scotchgard "spray-type soil repellent," Clorox "a common household bleach," Kitty Litter "cat-box deodorizer," and Frisbees "flying-saucer-shaped toys." Not mentioning brand names is a good idea, because a really apt hint in "Hints from Heloise" provides an aesthetic thrill that, for a second, makes a person feel like more than just a shopper.

What actually happened was I got hardly any sleep at my motel, because someone kept slamming a door right next to my room all night, and then I got up in the morning and took my shirt off the hanger and a large cockroach jumped out of the shirt pocket and landed on the floor with a strangled cockroach yell. I drove out to David and Poncé's, and Poncé and I sat around and talked for a while, and then David said, "Let's eat." Poncé and I got in her Datsun 280 ZX, and David and Tom Carey, a partner in David's plumbing business, whose sister Sue was Poncé's college roommate and maid of honor, got in David's half-ton Ford pickup. We drove to a nearby restaurant

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called El Jarro, owned by Arthur Cerna, whose wife's uncle was married to Poncé's grandfather's sister and whose cousin was Poncé's mother's doctor. It was happy hour at El Jarro, where you got two drinks for every one you ordered, so the table was quickly covered with margarita glasses. Tom Carey said that sometimes when Poncé and David got into arguments he, Tom, would referee, and would jump in and yell, "Time out!" He asked me where I was staying and I said the Miramar and he'd never heard of it. Poncé said that she had had a dream the night before that she made David ten color-coordinated bibs with little clips on them like the clips on a dentist's bib, and she was so sure the dream was real that when she woke up she went looking for the bibs. I ordered the cabrito, which is goat, and a Carta Blanca beer, and they brought me two Carta Blanca beers. Poncé said, "Did you know that the Chinese have different sweat glands than we do?"

After lunch, Poncé picked up the check, and we went into the parking lot, which was very bright, and got in the car, whose seats were hot, and we drove back to Poncé and David's. Tom Carey got in his car and went somewhere, and I got in my van, and Poncé got in David's truck. I followed them into San Antonio on the freeway—everybody passed me because I was going only sixty—and at a stoplight David leaned over and lifted Poncé's sunglasses and looked at her. We went to a restaurant-bar named Yvan, where it was also happy hour. Poncé said, "Did you see they've

invented a pill that you take and it tans you? Turns you kind of orange. Only problem is, it turns your palms orange, too." The bar filled with people, and Tom Carey showed up again. Poncé said, "Did you see that they've invented a flyswatter that looks like a little gun and the swatter shoots out and comes back?" Then the owner of the bar came over and talked to us. Tom Carey went somewhere again. Poncé said, "Do you *really* believe the Egyptians built the pyramids with wooden rollers?" Some guy with a beard came up to Poncé and asked her where she worked, and she said, "I'm a writer." He said, "You work for Ryder Trucks?" There was a lingerie show taking place in the bar, and models in nighties were walking around describing what they were wearing and how much the nighties cost. David said, "I don't like wishy-washy broads who say, 'Gee, maybe I will if you will, maybe I won't if you won't, oh, gee, I don't know.' Poncé isn't like that—she's not an easy woman." Then a model in a mostly see-through garment came up to David and said, "Hi, my name is Terri and I work for A Touch of Class Models and I'm wearing an apron-type baby-doll negligee from Shirlee of Hollywood and it just comes in red and the panties come with it and it ties in the back and it sells for thirty-nine dollars." David said, "I'm not interested in your body, I'm interested in your mind." Then we ate dinner and I don't remember what I had.

Next we drove to a place named Fuddruckers, and

there was only about a parking space and a half left in the lot, and David pulled his truck in and I backed my van really fast right next to him. We stood in the back room, at a bar that was a replica of an old Mexican tequila bar. When we came out into the parking lot, we were surprised to see there was only about a quarter inch between our vehicles. Then we went to a place called the S. K. Stampede, which was a dance bar in a shopping mall called the Central Park Mall, and David and Poncé left and went on home, and I tried to talk to a girl who was standing holding two drinks, and I bounced off as if she had an invisible shield around her. Everybody on the dance floor was dancing one huge synchronized Western dance, and I decided to go back to the motel. I walked out a door that I thought led to the parking lot but in fact led into the mall, which by this time was closed and empty and dimly lit. The door back to the bar had locked behind me, and all the racket in the bar was just a tiny noise through the door. I walked around the mall until I found a door to the parking lot, but the door was locked, so I walked to another door, but it was also locked. I sat down on the cool floor for a while. Then I stood up and examined the sliding security grate over a store window, and I noticed that the store had for sale a digital wristwatch with an alarm that played "The Yellow Rose of Texas." I thought about spending the night in the mall, and then I walked around some more. Down a corridor I heard voices, which turned out to belong to two janitors, and one of them said he would take me to someone who had a key. He took me down another corridor and down a narrow hall that was completely dark and through a door into a carpeted, track-lit office with paintings on the wall, and he left. A member of the Bexar County Sheriff's Department was in the office, and he asked me for my driver's license. I told him how I came out of the wrong door of the bar, and he again asked for my license. I said all I wanted to do was get out of the mall, and he told me to give him my license and sit down and shut up or he'd throw my ass in jail for public intoxication. I told him I hadn't seen much else but public intoxication in San Antonio that night, and his handcuffs made a cricketlike sound as he took them off his belt. I gave him my license. He asked me my birthday and I told him. I looked several times at his name tag, which said "Vela," and he asked me why I kept looking at his name tag, and what I was thinking was, I thought white people beat up on Mexicans in Texas, not the other way around, but I didn't say that. Then I sat there for forty minutes while he checked my I.D. with the police computer, and when it didn't turn up any criminal record he took me to a door to the parking lot and told me that if it had been anyone but him I'd be in the Bexar County jail right now. I took a big roll of cash out of my pocket and said, "You think I'm some kind of vagrant, but I've got over a thousand dollars there." He said, "What motel are you staying at?" I said the Miramar. He said, "Well, you better

not go flashing that money around the Miramar if you want to hang on to it." Then I got in my van and drove away.

The house that Poncé and David live in is 180 feet long. It is a contemporary-style ranch house, and Poncé and David designed and built it before they were married. It has two driveways. From the outside, at certain angles, it looks like acres and acres of blue clay-tile roof. At one end of the house, David and Poncé and Poncé's assistants have their offices. David runs his plumbing business from his office. The card catalogue in Poncé's assistants' office lists over fifty thousand household hints, with over two thousand cards just for nylon net. At the other end of the house is Poncé's bathroom, with a special deep drawer for electric curlers and hair dryers in the counter under the sink, and a scale set into the floor through the carpeting (because a scale won't weigh right if there's carpet under it), and a mirror with light bulbs around it, and a sunken marble bathtub with taps that look like golden shells, from which Poncé can look out the window and see the grove of cedar trees where her Chihuahua, Tequila, is buried. The other rooms in the house are a conference room next to her office, where Poncé can talk to people she doesn't want to bring into any other part of her home, and two guest bedrooms, a workroom, a den, four bathrooms, a dining room, a living room, a kitchen, a walk-in pan-

try, several walk-in closets, the master bedroom, a sauna, and a wine cellar. The wine cellar is a climate-controlled room, not a cellar. One of the guest rooms has a miniature bar in it. The living room is decorated with antique Chinese works of art—cloisonné incense burners, a temple table, an ivory ship with ivory figurines representing a Chinese version of the Atlantis story, and a folding screen with an ivory bas-relief of horses, which Poncé always liked as a little girl because one of the horses near the bottom of the screen has his legs backward. On one wall, there are opium bags embroidered with a tiny stitch called the blind stitch. Poncé said she'd heard that the blind stitch got its name because women went blind doing it, and that the Communist government made the stitch illegal when it took over. The living-room windows sometimes have feathery, sketchy body and wing prints made by Poncé's cockatiel, Fussy, when he gets out of his cage and flies around the house. These prints look pretty when the sun is right, and Poncé does not wash them off. In the hall by the living room hang two of Poncé's mother's paintings, *Euphoria* and *The Death of the Arizona*. The kitchen is futuristically spare, with vacant expanses of butcher block. Its simplicity is refined, like the simplicity of the ideal gentleman. It is latent with appliances; there is an electric trash compactor under the counter, and a microwave oven, two ranges, and two infrared food-warming lights. A blender and a toaster oven sit back against the wall, under quilted dustcovers. There is

an extra spigot, and the water that comes out of it is 160 degrees. The decades that Poncé and her mother spent thinking about kitchens are palpable here. By the kitchen are sliding glass doors—with decals at both human and dog eye level to prevent collisions (a hint from years ago)—leading to the back-yard patio. In the patio are two Japanese pinball machines and a swimming pool.

Poncé: "I just love to sit by the pool and watch the roadrunners tease my little schnauzer, Zinfandel. They come up onto the patio as close as they dare, and when Zin can't stand it anymore she runs after them, yapping like mad, and the roadrunners take off, and then Zin gives up, and then pretty soon the roadrunners are back."

David: "That pool's just sitting there growing algae. I put half a gallon of muriatic acid in it and nothing happened. The problem was, a guy who worked for me left the filter on recycle instead of clean for four days, and we had a big rainstorm. Now I think we've got a kind of algae nothing will kill."

The San Antonio *Light*, in a front-page story about Poncé and David's wedding, said that a wedding guest said, "I've been in a lot of houses in Texas, but this is the first one that's in two time zones." The house feels that way not just because it's big. The sunlight ricocheting off the white driveways and the spicy breath of Mexico freshened through air-conditioning make most of the house feel like mid-

afternoon in San Antonio, but the five or six hundred "Dear Heloise" letters that come to the office every day from all over the world bring that end of the house a much more dislocated sense of time. When the phone rings—with a discreet, understated, low-pitched ring that is somehow more compelling than a loud one—the call is often from New York, where it's an hour later, or Los Angeles, where it's two hours earlier. Poncé carries the phone with her on a long cord all over the house, and whenever the phone is, the feeling of abstract, average time floats above it. Poncé often answers the phone; when her assistants answer it, they tell her over the intercom who it is.

(*ring*)

"Poncé, a disc jockey from a station in Spokane, Washington, has a question for Heloise. He says the President of the United States is coming over to your house in five minutes, what do you do?"

"The President is coming in five minutes? Here?"

"No, no—he wants to know *what if* the President were coming over in five minutes, what would you do."

"My God, I thought he was coming here. O.K. . . . Hello. . . . Uh-huh. . . . Well, I would say first, pick up the big chunks. Hide the shoes. Stuff the dishes in the dishwasher, or put 'em in a tub and hide 'em in the oven. Open drawers and shove everything in off the countertops. Clean the bathroom mirror, make the bed. Then the house looks at least halfway decent.

Then sprinkle some cinnamon in a pan and put it on a burner on low. By the time the President gets there, the whole house will smell nice, like cinnamon rolls."

(ring)

"Poncé, a newspaper writer from New Jersey says she's doing an article on freezers, and she wants to know what you have in yours."

"O.K., thanks, Hazel. . . . Hello. . . . I know there's all kinds of things you can keep in your freezer, like sprinkled clothes before you iron them, or valuable papers so they won't burn up in a fire (in plastic bags, of course, so they won't get wet), or homemade labeled TV dinners in foil, or vegetable scraps to make stock, or popcorn so it'll stay fresh, or candles so they won't drip when they burn, or girdles so they'll go on easier and be cool in the summer, but, to be perfectly honest with you, what I've got in my freezer right now is just some old rolls to feed the birds, a couple cans of coffee, a few frozen pizzas, and something all wrapped in freezer paper that I don't even know what it is."

(ring)

"Poncé, a man from *Parade* magazine says he's doing an article on pet peeves, and he wants to know what Heloise's are."

"O.K. . . . Hello. . . . Well, let's see. People who come in and drop their purse and shoes in the living room. It only would take a second to put them away. Drivers who don't use their blinkers when they turn, or who keep their blinkers on after they turn. People who put out cigarettes in their food. Oh—you know

what really drives me crazy? Wax for no-wax floors. Here somebody saves their money to buy a no-wax floor, and the next thing they know someone comes along and tells them that not only do they need wax for their no-wax floor, they need a special kind of wax. I think that's really a crock of cranberries."

Since being a homemaker and ordinary citizen is Poncé's profession, she can turn from Poncé into Heloise at any second. "I never realized what Heloise was," she says. "I've always made a point of being Poncé. To me, Mother was always just Mother. The first time she left Hawaii on business, I couldn't understand it. It made me physically sick. I was in third grade. I cried and cried. She said, 'I'm not leaving you.' Suddenly—boom!—she was gone. Now I realize how much it must have hurt *her*, and I realize how gutsy she was back when women were not. When she became Heloise, she had something to do most of the time—there were always fourteen jars of something she was testing on the kitchen table—so I learned how to take care of myself. That was good experience for what I do now. I started helping on the column when I was ten or eleven. One time, she and some neighbors and I baked two hundred loaves of bread about two hundred different ways to see which way of baking kept the tops the softest. I helped in her office, too, some summers. Other summers, I got summer jobs. Baskin-Robbins trained me for a week so I could scoop ice cream to just a certain number of ounces. I worked there for about two months and

gained ten pounds and quit. Don't ever believe it when they say you'll get tired of the ice cream if you work there. Then after high school— I went to Alamo Heights High School, which was and is known as the snob school in San Antonio—Chris Geppert, who is now Christopher Cross, who's won four Grammys, was in my class—anyway, for a graduation present I got to go to Virginia, and from there some friends invited me to Ocean City, Maryland. One of those friends was Susan Dredge, who's now Susan Johnson, who lives in Hawaii, who invited us for a visit last fall. Anyway, in Ocean City I got a job in a Best Western hotel washing sheets and towels. When I went in for the job, the man there told me I was too short to fold the sheets without having them drag on the floor, so I went and found a wooden soda carton and told him I could stand on that, and he hired me. I got my best pair of cutoffs at that job—a maid found them in a room and gave them to me and they fit perfectly. The laundry room had no air-conditioning and very little ventilation and two commercial-size washers and one commercial-size dryer. I made seventy dollars for a seven-day week, and I learned quite a bit. My friends and I had a cabin across from the ocean near Phillips Crab House, which was always full of four hundred people knocking on crabs. I thought that was so barbaric. I also hated Maryland, because they had a state income tax. Mother kept writing and calling, telling me to come home, but I didn't want to. Finally, she said she was going to send the police after me, and

I knew she would do it. So she flew to Washington and I went and met her at her hotel, which happened to be the Watergate, and we flew back to San Antonio. That was the first time I was ever out of the state of Texas by myself.

"After I got back, I decided to go to Southwest Texas State University, at San Marcos—L.B.J.'s alma mater. I wasn't a sorority type. I don't need a sorority. I know that they're very beneficial, I just don't need them. I lived in a private dorm off campus with Sue Carey and two other girls. Sue and I have been best friends since high school. We never worried about stealing each other's men. We could wear each other's clothes—each other's tops, actually. I had a purple VW that was so neat, and I also rode a motor scooter and neither of my parents knew. Once, my motor scooter fell over and I couldn't get it back up, and I decided it was time to get rid of it. When it was my turn to do the shopping, I'd drive twenty-two miles to the Air Force commissary and shop there, because that was cheaper than driving all over town to five different stores. When people came over, they always opened the refrigerator and said, 'Gosh, this looks like my mother's refrigerator.' For my college-graduation present, I went to Russia with Daddy. Someone had put the wrong entry date on our passports, so the Russians locked us up at the airport for a day until they could find someone with the authority to change the date. I stopped eating beef after I went to Russia—it was like junior-high roast beef.

Over the next five years, I worked on the column, I took fencing lessons, I went to Europe three times, I went on a wine cruise, I went to China with Daddy. I would not trade my Russia or China experience for anything. I got a grasp of what it was to be an adult in an adult world. At the time, I would have traded it for a Thrifty Scot Motel. On January 8, 1977, when I was on a date with somebody else, I met David Evans at a friend's apartment, and then the next day, Super Bowl Sunday—the Raiders were playing the Vikings —I watched the game with him. Later, we went out to a bar, and David played 'Kaw-Liga,' that song about the wooden Indian, by Hank Williams, on the jukebox. That's when I knew David was a real San Antonio boy. I had several big arguments with Mother that year, because she was getting sicker and sicker and she kept right on smoking, but finally I accepted that smoking was what she wanted to do. Toward the end of 1977, Mother's health really declined. The day before Christmas, David and I kept trying to get her to go to the hospital, and she said, 'I am not going into the hospital on Christmas. I am not going to ruin your Christmas and I'm not going to ruin Dr. Hernandez's Christmas.' So David said, 'If you won't go, I'll carry you.' Well, Mother slept with a .32 revolver under the bed, and she pulled that revolver and she said, 'You lay a hand on me and I'll shoot holes in the ceiling.' "

(David: "I backed out of that bedroom pretty damn quick.")

"So she didn't go into the hospital until the day after Christmas, and two days after that she died. We were at the hospital. I cried and I hugged David and I hugged the doctor, and then I went and made phone calls. When I got home, I called Mother's friends at King Features."

Poncé believes that everyone is created equal. One of the first things she ever said to me was "There's nobody better than me, I'm no better than anybody else." Her mother believed that, too. She used to tell her readers, "There is no one who will ever come into your home who is more important and loved any more than your own family," and "I hope you will want to accept the facts and tell yourself that you are just one of the multitude. I am!" The readers knew that Heloise was sincere in offering each of them a share in the column, and that is probably why they sent in hints so willingly. For Poncé, the only problem with this egalitarian attitude is that, although she may be no better than anybody, she is both smarter and richer than most people. Her mother spent almost none of the income from the column, preferring to keep herself within the limits of her husband's service pay and pension. The column has been one of the most widely syndicated columns in the world for over twenty years. Now Poncé is in the same situation as a comedian who has become so famous making jokes about how girls put him down that he attracts

all the girls anyone could want. She has been so successful understanding the life of the average homemaker that she is no longer an average homemaker —she is probably a millionaire. Poncé's mother solved the problem by slipping away from the name Heloise, as if it were a too crowded party in her honor. Poncé's mother's middle name was Kathy, and after Heloise became a well-known name she began to call herself Kathy. She had many friends—particularly at a vacation spot in the Texas hill country where she had a cabin—who knew her only as Kathy and had no idea of her other identity. Maybe she anticipated that one day Poncé would have a similar problem, and that's why she gave Poncé so many names—so that she would have plenty of extras in case any one name became too famous.

When I was in San Antonio, I met several people besides Tom Carey and Officer Vela. I met Barry Byrne, Anne Cravens, Hazel Bolton, Anne Mundy, Bruce Lynxwiler, Milton Willmann, John Kungle, and Judy Hill. Barry Byrne is a pilot who met Poncé and David at a balloon meet. (Ballooning is a hobby that the three share.) Barry works for Mexicans who own private planes, and he was staying at the house while his plane was fitted with new radar equipment. Anne Cravens is a friend of Barry's who teaches deaf children in elementary school. She had just bought a new house in San Antonio, and her new next-door

neighbor was harassing her at all hours by opening his windows and blowing an automobile horn that he had set up inside his house. Hazel Bolton and Anne Mundy are mother and daughter. They are Poncé's assistants. Bruce Lynxwiler is a handyman who at the time was doing some work for David. Milton Willmann is a well-groomed local policeman with heavy dark-rimmed glasses who stopped by Poncé and David's one afternoon on a social call. John Kungle is a police officer in Poncé's township who stopped me one night because the light over my rear license plate was burned out. Judy Hill knows Poncé from college, when she was one of her roommates senior year, and she came by when I was there. She grew up in Del Rio, Texas, and is a social worker for the state's Department of Human Resources.

I was talking to Poncé and David and I said something funny, and David looked at Poncé and said, "You know, we should get him together with James Reveley." James Reveley and his wife are good friends of theirs. James Reveley is a well-built, snub-nosed man with brown hair and a red beard who holds his elbow to his side when he talks and illustrates points with compact hand gestures. He has two professions —dentist and undertaker. As a dentist, he occasionally makes scary or funny-looking sets of false teeth for his friends. As an undertaker, he is something of a maverick. Other undertakers do not like it that he favors funerals that cost no more than five hundred dollars—a cause he once went on the Tomorrow

show to espouse. He wears a beeper on his belt. We met him and his wife at Maggie's, which had an electric train on rails running above the bar. After some drinks, we decided to go to a restaurant called Texan Seafoods North. James Reveley said we should all go in his truck. His truck was a Chevy Suburban with dark-tinted side and rear windows. He and his wife got in front. David opened the back door, and we saw a cot inside.

"I think we'll take my truck," David said.

"C'mon, climb in," James Reveley said.

"What if you get a call on your beeper when we're at the restaurant? If we don't have David's truck, we'll be stranded," Poncé said.

"Nobody wants to ride with me," said James Reveley.

Poncé and David and I went in David's truck. "I hurt his feelings," David said. "I feel bad about that. But I couldn't sit on that cot."

"What if he got a call while we were at the restaurant? We'd be stranded," Poncé said.

Texas Seafoods North had a salad bar set up in the hull of a twelve-foot sailboat. "That's nothing," said James Reveley, who had quickly let bygones be bygones. "I was in a restaurant last week where they had a salad bar in a red M-G." We sat at the seafood bar and ordered shrimp and raw oysters. James Reveley called them "awsters." James Reveley asked me if the seafood wasn't better than they had in New York, and I agreed that it was very good. The restaurant

owner came by (as owners tend to do when Poncé eats out). "We've got a man here from New York," James Reveley told the owner, "and he's been sittin' here just eatin' the hell out of these aw-sters."

Then he said, "You know, this part of Texas—Dallas–Fort Worth, San Antonio, Houston—it's got everything you could want. All over the country, people are starting to refer to this area as the Third Coast." He turned to me. "What motel are you staying at?" he asked.

I told him I was staying at the Miramar.

"The *Mira*-mar?" he said. "The *Mira*-mar?! You're *staying*—at—the—*MIRA*-mar?" (He gave the name an inflection unrepresented by any typeface.) "I cannot believe it! Don't you know about the Miramar? Haven't you ever heard about the Miramar?" He grabbed his wife. "Dear, this man is staying at the Miramar!"

"The *Mira*-mar!" she said. The two of them began to laugh so hard that they had to hold on to each other.

"My God!" James Reveley said. "The Miramar is the biggest damn rut hut in San Antonio!"

"Haven't you noticed all the traffic? Haven't you noticed the hookers all over the place?" asked his wife.

"Why, that's the busiest motel in town at lunch hour," said James Reveley. "You want to find a lawyer in San Antonio at lunch hour, go to the Miramar. There's a little barbecue place around the corner from the Miramar where they have great ribs, and if

you ask a girl at lunch if she wants to go get some ribs most of them know that's just a code word for going to the Miramar, which is just a code word for shackin' up."

"The *Mira*-mar!" his wife said.

"I've got a macabre sense of humor," said James Reveley, "and there was a time when a buddy of mine and I used to put on dark suits and ties and sit in his black Plymouth on Miramar Street and scare the hell out of all the guys, who thought we were plainclothes cops. Those johns would start slinking around, we'd laugh to death. Listen, when you check out, don't turn in your key. A key from the Miramar —now, that's a real San Antonio keepsake."

Off and on for the rest of the evening, James Reveley or his wife would say "The *Mira*-mar!" and then all of us would laugh.

On Saturdays, Poncé's assistants don't come in to the office. The phone does not ring very much. Many of the rooms of the house are filled with the kind of midday twilight that goes well with the sound of someone vacuuming or the sound of a soap opera on TV. On a particular Saturday, Poncé woke up and exercised on the mini-trampoline in her bedroom. She made scrambled eggs and bacon and English muffins for herself and David. David asked her if she wanted to go to the big chili cook-off, the Chilympiad, up in San Marcos. She poured herself a Tab. I came

over. We discussed the chili cook-off. Poncé said that the Chilympiad was interesting but in the last few years it had got so big that it was also a little sickening. Poncé poured me a root beer. David said he wanted to go up to Medina Lake and take his boat out, even though the wind was high and the lake was probably rougher than a cob. Poncé said she just wanted to stay around the house. She poured herself another Tab. David went to the lake. Poncé was walking around barefoot—the way she is most of the time when she's at home. She went out in the front yard to get the mail and play with her dog. She walked to the garage behind the house to show me the white 1972 Thunderbird her mother used to drive. It had only twenty thousand miles on it. She poured herself another Tab. She took an empty one-liter Coke bottle, soaked it in hot water, and removed the reinforced black plastic bottom. She punched some holes in the black plastic bottom with an icepick, put some potting soil in, and then used it to repot a several-month-old avocado plant. She washed her hands and fixed herself a cup of tea. She went to the workroom and caught her pet ferret, Fred. In the kitchen, she gave him a baking-soda bath, which she does often, because he is an albino and shows the dirt. She poured sploofs of baking soda on him and then brushed the baking soda out of his fur with an old, soft hairbrush. He lay quietly on his back during this. Then she tied a red ribbon around his neck and set him on the floor. She swept up the baking soda with a whisk broom.

She washed her hands again. She made lunch—a tuna-fish sandwich, Fritos, and a root beer for me, tuna-fish salad on lettuce and tea for her. She put the mayonnaise back in the refrigerator and then asked me if I'd like a pickle. I said yes, and she went to open the refrigerator. Her refrigerator is the kind that closes with a hiss as the rubber vacuum seal around the door sucks it shut, and then won't let go for thirty seconds, so that it is impossible to shut the door and immediately reopen it.

"Shoot," she said, and stood by the refrigerator door. The wasted seconds were almost visible, expiring in the air around her.

"Isn't there some kind of hint that would solve that problem?" I asked.

"No," she said. "There is absolutely nothing you can do about this at all."

Lawrence Weschler
The Fiction of Nonfiction
{Form & Freedom}

Week Four

(*Bringing it all together*)

Joseph Mitchell, "Joe Gould's Secret"
from his *Up in the Old Hotel* collection