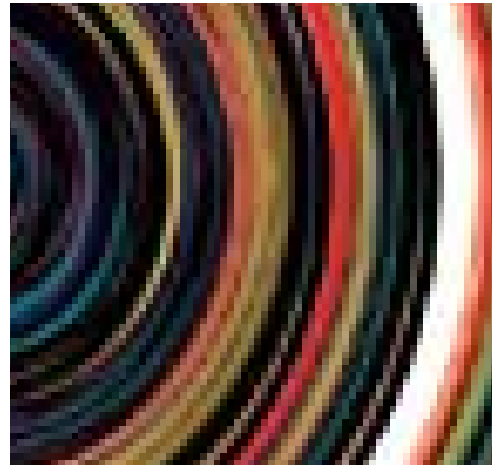
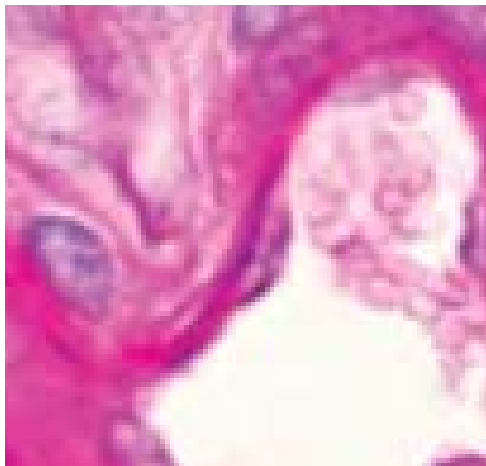
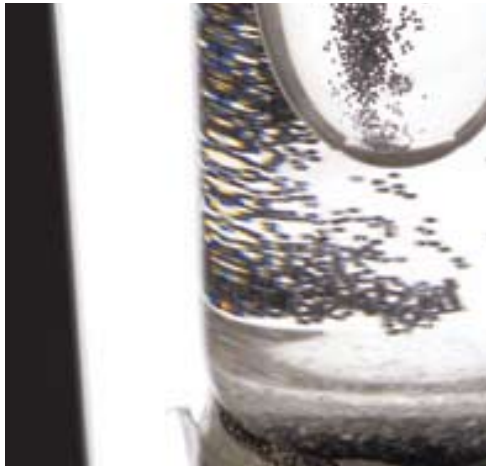


NDSU NORTH DAKOTA STATE UNIVERSITY ■ FALL 2003
magazine





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NDSU Volume 4 Number 1 FALL 2003 magazine

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Volume 4, number 1

NDSU magazine is published twice a year, in spring and fall,
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editor's note



Once, I was young, a college student, and thus fearless. As an intern at the Bismarck Tribune three consecutive summers (the management there deserves some sort of special award) I reached a comfort level, which in retrospect I imagine many of us regret. Nevertheless, one day the assignment came to write an article about the economic impact of a major softball tournament held every summer. The real reporters chatted with me about this for a few minutes, and then I tapped out the first thing that popped into my head, a lead paragraph along the lines of “... scribble, scribble, carry the three. Holy smokes Batman, that’s a lot of economic impact.” I believe that lead ran in the newspaper.

I resurrect this little story now because I am again struggling, though one hopes more thoughtfully, with how to write about economic impact, thanks to the great news that Alien Technology selected NDSU’s Research and Technology Park to build a major high tech manufacturing plant.

New jobs in North Dakota makes a good headline. But as a storyteller, the question is how to go further, to convey meaning, to get to the essence.

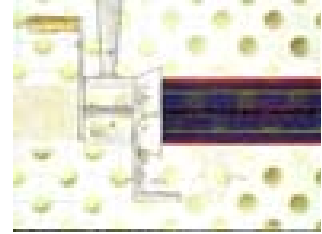
I believe the words when I write them: NDSU is at the center of partnerships that are succeeding in bringing industry, research and money to North Dakota and that means better education for our students and more opportunity for our citizens. But the little nag in my head scolds me for using the word “opportunity.” It’s just a tish over-used, she says. Surely you can come up with a stronger word, something with more meaning.

Then, one day, after all these years, I saw it. It’s a look in a student’s eyes as she recognizes an opportunity. All of a sudden, I can think of no better word. She took a big bite at the offer to write an essay for this magazine, a big deal at this point in her career.

That’s it, hundreds of times over.

Thank you for reading.

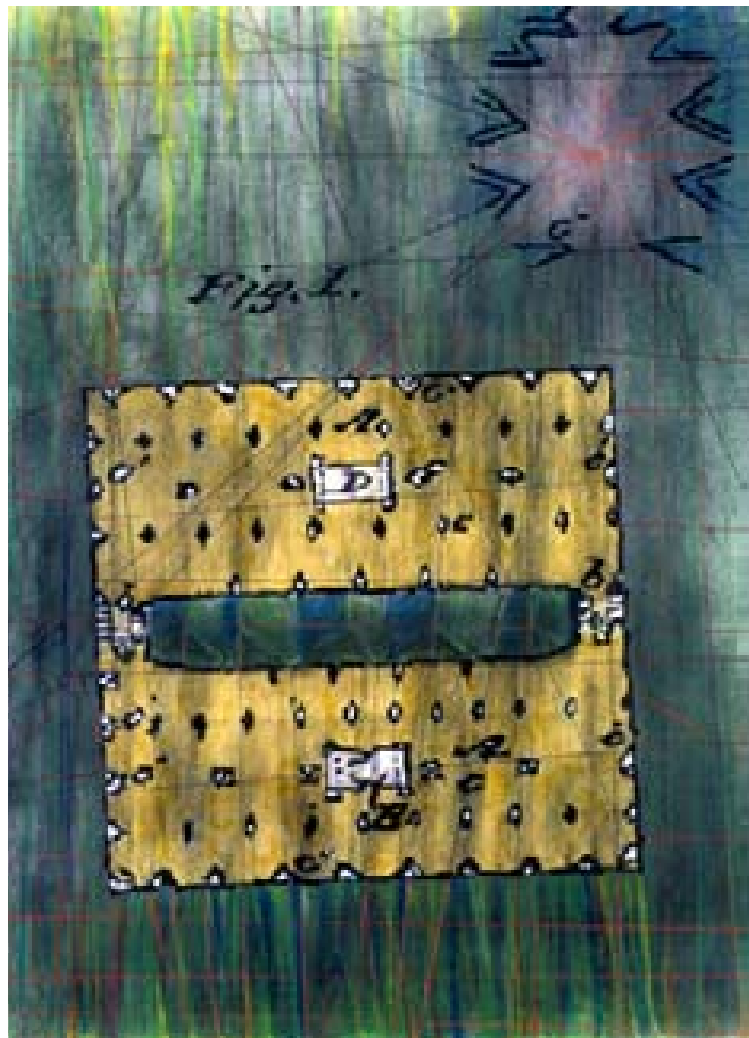
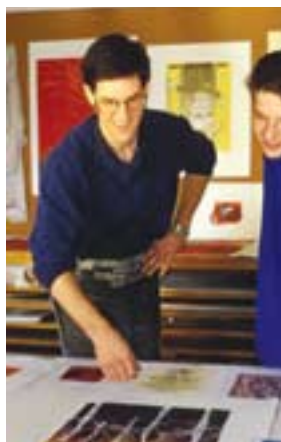
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BIOTECH BLASTER 2003
pastel on paper
32" x 40"

on the cover

Kent Kapplinger is an assistant professor of visual arts at North Dakota State University, where he is director and master printer at the Printmaking, Education and Research Studio. His work is part of collections around the country, including the Art in Embassy Program, Washington, D.C., The Plains Art Museum, Fargo, and the Slovenia International Art Club, Ljubljana, Slovenia. His work appeared in the Fall 2002 NDSU magazine.



UTTER 2003
pastel/shellac on paper
40" x 32"

letters

Just read your recent “Editor’s Note” — ran into the “you don’t look like you’re from North Dakota” comment a lot when I first came out East. Never did figure out what we’re supposed to look like — Minnesota Swedes or Norwegians, maybe? That comment was usually followed by “actually, I never met anyone from North Dakota before” — after which I’d introduce the speaker to my wife, another native Nodaker, so they could double their ND acquaintances at one time! But the best line I got was from a guy from New Jersey (New Jersey yet!) who closed the conversation by telling me that he had not previously actually believed ND existed, as he had never been there, had never met any one from there, and had thought it was just one of those “rectangular states they used on the map to separate the East Coast from California!”

Gary Krump

Thank you for the NDSU Magazine you sent me. I like its format — informative and easy reading ... and yes, its quality is tops. I also thank NDSU for all the printed materials it has been sending me all through the years since I completed my PhD (Entomology) there in 1988. Too bad, I haven’t had any opportunity to visit my Alma Mater even just once. Maybe a research fellowship in NDSU, someday?

Currently, I am the Vice Chancellor for Research and Extension at the University of the Philippines Los Baños located at College, Laguna, Philippines.

More power to you and your staff, and of course, to my beloved NDSU.

Yours sincerely,

Augusto C. Sumalde

contributors



Reed Karaim (*Coming home*, pp. 10-19)

believes his greatest influence on North Dakota may have come in 12th grade, during a Future Business Leaders of America convention, when he started a measles epidemic that spread to all corners

of the state. When not spreading infectious diseases, he spent his childhood days in Mayville reading every book he could in the state university's library, where he was lucky enough to have a mother who was also the assistant librarian. His writing career began at the NDSU Spectrum and proceeded through stops at the Cass County Reporter in Casselton, The North Dakota Farmers Union paper, The Grand Forks Herald, and on to Knight-Ridder Newspaper's Washington Bureau. He worked eight years there, covering a variety of beats, but ending with the 1992 presidential campaign of Bill Clinton.

He quit to pursue a long-time dream of writing fiction. His novel, "If Men Were Angels," published by W. W. Norton, was a 1999 summer selection in the Barnes and Noble Discover Great Young Writers Series. His non-fiction has appeared in The Washington Post, U.S. News and World Report, Fortune, USA WEEKEND, Civilization and many other publications. He has won awards for his journalism, fiction and poetry. He lives with his wife, the author Aurelie Sheehan, and their daughter, Alexandra, in Tucson, Arizona. He regrets to say he never, in any sense of the notion, became a Business Leader of America.



Rebecca Kilzer

(*Lessons Learned*,

pp. 46-47) grew

up on a farm

near Mott,

N.D., with

two sisters,

three brothers,

a herd

of cows and

a flock of

chickens. She came to NDSU in 2000 and has been studying mass communications ever since. An adventurer at heart, she looks forward to graduating in May 2004 and working in public relations at a firm or large corporation near the West Coast. But until then, she will spend her time managing the NDSU Memorial Union Gallery, planning a wedding and, of course, enjoying her last year of college life.



Jerry Richardson, (*Hot and cold wars*, pp. 42-45) former director of the North Dakota State University communications office, graciously contributes time out of his retirement to write for the magazine. His work has appeared in several issues.

These days, **Leo Kim** (*photograph*, p. 26) has a diverse fan base, thanks to his landscape photographs of North Dakota, which have toured the Upper Midwest in art exhibitions and are captured in a beautiful book. That the exhibition and book are so well received is a nice case of karmic payoff, perhaps, since Kim dropped his commercial enterprise and self-funded the travel and printing costs for the book. He's back to work in



a studio these days, welcome news for his many clients. Kim is a recipient of the Gold Award for excellence in corporate photography from Photo/Design, New York, and numerous other accolades, including a Gold Award from the national Community Relations Report and the Best of Show for the photography and design of the North Dakota Arts and Humanities annual report. He has been featured in the Minneapolis Star Tribune and the International Photo District News as well as several other publications. He may be reached at www.leokim.com.



Lots of people like **Julie Babler's** work. As art director for NDSU magazine, she has gained fans among readers, judges and other magazine editors. Specifically, her work was recognized by the industry giant, *Communication Arts*, March/April 2003. And, for a one-two punch, her work on an annual report will appear in an upcoming issue of *Print*, another big name in the design world.

you can't go home again

—Thomas Wolfe

Thomas Wolfe never lived in North Dakota. Whenever I return to Mayville, where I was born and spent most of my childhood, I am always struck by how much of it feels the same. Twenty-five years disappear with my first glance at Main Street.

It's partly an illusion, of course. The streets and buildings may look the same, but most of the old businesses are gone. Gift shops and video rental stores have replaced hardware and grocery stores.

The economy is much different, harder now.

Still, in a nation of perpetual and frantic change, a surreal, surface timeliness holds sway. The rituals, the rhythms of life feel the same. Old men still shuffle toward the same stools in the same cafes. Children still loop lazily across the streets on their bicycles on late summer evenings, unattended, safe. The gossip is about the same. The kindness, and the pettiness.

When I was in my mid-20s, like so many young people from North Dakota, I left the state for a better job elsewhere. Like thousands and thousands of others, I never came back, not to live. North Dakotans think of themselves as the last of small-town

Americans. But, really, we are largely economic or social exiles. For almost a century now, the state has been sending too many of its young into the larger world.

Most of my old friends from high school and college now live elsewhere. Some left in search of opportunity. Some left just to get away. Growing up in Mayville in the 1970s, I remember the town's conservative expectations weighing on me like a gravestone. I remember standing on the roof of the abandoned chicken coop on our farmstead and staring as far south as I could, which was all the way to the horizon, trying to see beyond the rim of my world, trying to imagine everything that was happening out there. I remember longing to escape.

So I finally did.

Yet North Dakota is always there, waiting for you, waiting for you to come to terms with both its strengths and weakness. You can go home again. The character of the people, the little towns, the broad unchanging sweep of the land itself, are still there.

This is both a blessing and a curse. The state gives its expatriates an unusual chance to come to terms with their own histories. The past is waiting for most of us down the end of a flat highway. With luck, we can use that chance

to understand, appreciate and even forgive a little more than we ever expected. We may come to appreciate small-town qualities we once denigrated, recognize the virtues of habits we once dismissed as provincial.

But if the past is still full of unresolved questions, buried anger, enduring grievance, then the time-in-a-bottle nature of so much of the state is a trap. The setting for your old unhappiness is still there, and they've hardly moved the furniture. It's all just waiting for you.

This edited excerpt from a novel I am working on is not about me, but it is about trying to understand these feelings. The character, David Petrovsky, fled his small town and family many years earlier with a sense it was the only way he would survive. Now he returns to his hometown (which I have cleverly named Mayriver, so you won't confuse it with my hometown) and a brother he hasn't seen in years. He returns to North Dakota, this odd, unlikely place he finds etched still at the base of his heart.

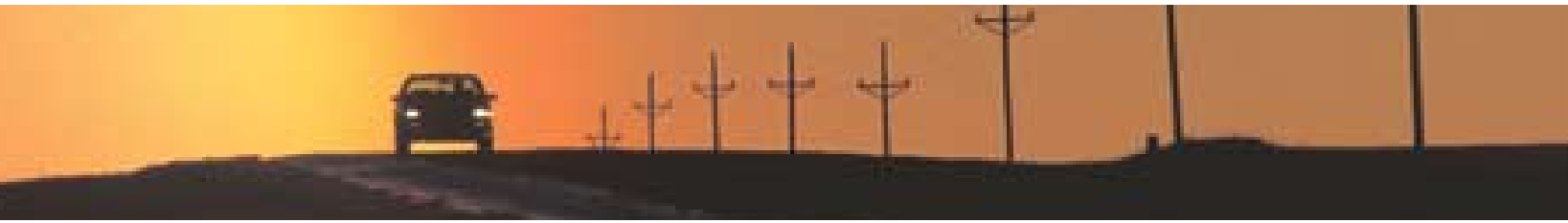




Coming home

1998

He had been driving for two and a half days and the world was starting to bend and blur in the corners of his vision. His journey had taken him across desert, forests of oddly balanced stone, vertiginous green slopes, and then into the long, familiar unfurling of the middle plains, his inner landscape, still, after all these years. When he dreamed of country, it was always this country, the lazy swell and trough of the grassland, the ribbon-straight roads, the imposition of order as you turned east: trees in surveyor's lines, square miles of earth tilled black, square miles of grain cut close, a golden burr



beneath a limpid sky. It was late October; he was thirty-four years old, and he was returning to North Dakota for the first time in eight years.

Scott had called. Their father was dead. David had waited for the story, some last flamboyant gesture, a leap from the top of the grain elevator toward a five-gallon drum of rum and Coke, or a bet he could lie down on the railroad tracks and disconnect the engine from the rest of the train while it rumbled overhead.

But it had been a stroke in the middle of the night, and there was nothing to the tale except a blind groping of the old man's hand toward Scott's shoulder in the ambulance, a grip still strong enough to leave a bruise, then the word from the doctor an hour later, the drawn curtain, and the fact that Scott had forgotten to call the priest for last rites, which meant there was now some debate over whether Father Otto would preside over the funeral.

He reached Fargo on I-94 and was surprised how the city had lapped out of its old boundaries in a scrim of cheap apartment blocks, oversize discount stores and chain motels. Well, it was part of the United States after all, and he guessed he shouldn't be surprised that the tide of prosperity had floated its debris to this almost-urban outpost on the edge of the Big Empty. The country was booming; money was the trump card in any debate. Still, it left him melancholy. He had driven nearly two thousand miles from Los Angeles, mostly through unspoiled country. He wanted to think of the Red River Valley that way, although he knew it was false nostalgia. God didn't use plows. This had always been a manmade landscape, a world pressed into being.

He drove north on I-29. Sky and earth. Small towns. Everything looked the same to him: the silver grain elevator pricking the heart of each town; the railroad tracks running out of both ends like a wire stringing them all together. He remembered the country at night, so black and empty that each town floated like a single blurred light, and sometimes you saw the Burlington Northern moving between them, sparks jumping off the boxcar wheels in the dark like fireflies, an artery of fire, impossibly thin, stretched across the distance.

The sun was setting and the colors bloomed: a grossly theatrical pink curtain, laced with threads of scarlet, a fringe of midnight blue. The best sunsets in the world, his father always said. Why not? They had to be somewhere. Why not here? His thirty-four years had yet to bring him to a place with more sky or a slower unwinding of the day. He recalled the summer sun slanting toward the earth for hours, stalling on the horizon like a deflated beach ball.

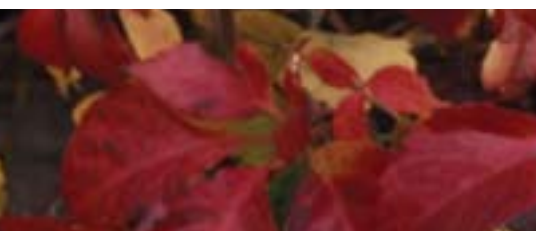
Now, in mid-autumn, the show was shorter but no less spectacular, a violent fan of color, the sun tumbling as if off a table, slipping beneath the rim of the Red River Valley before you caught your breath. It filled him with a host of uneven,

familiar voices. Who are you now? Who do you think you are now? He thought of his earth-tone apartment in Sherman Oaks, the pastel-covered scripts piled on the desk, and the old whispers made him impatient.

He turned on to 200 in the deepening blue and there was no escaping the unscrolling of the years. He followed a succession of earlier selves down the highway. Every curve, tree, stand of cattails, farmhouse window glowing yellow rose before him with such familiarity, such a sense of fundamental remembrance, that he was lost in a funhouse of his first eighteen years. David Petrovskys multiplied in front and around him until he was herding the whole dead weight of his early life along the narrow road.

There were no other cars in sight. He pulled over and stepped onto the gravel shoulder. The air held the scent of turned earth. The first stars were directly overhead. Lights from the Lovelace house escaped a stand of trees. A thought came to him: You have screwed up so many times and in such splendid ways since you left here, what can your first eighteen years matter? Ask Kattarina if she cares; count the pages in the trash can and the halting music on those you saved, those that miraculously ended up being read or spoken by someone. Then remind yourself how lucky you have been despite it all.

The road was just a road. The fields and the trees and the smells in the air



were part of the past. The past was the past. He drove the last miles slowly. As he took the final curve he was surprised by a row of grain bins glinting like 1950's spaceships. A strip of cheap townhouses swung into view. Everything else was as he remembered. Mayriver appeared as a swelling in the landscape, an island of trees topped by the ghostly presence of the water tower. The reassuring bulk of the brick college buildings anchoring the north end of town swung into view, the highway straightened out, and the college disappeared. The town was a wall of trees, the bright lights of the CENEX station a lonely herald at the gates.

He drove in. The old A&W Drive-in had become the A&M. Had the letter just tipped over? The Mayriver Motel was still next door, and, from there, it was all the same, the streets, the homes, the yellow-brick-road pools of light beneath the streetlights. Time had no purchase here. Years hung suspended in air. You could run your hand through them, brush them off on your sleeve, shake them out of your hair, dance through them like rain. You could count them and, unlike snowflakes, they were all the same. You could hold your breath, but sooner or later you would breathe them in. Stopped. Back. Home.

Such crap. Nothing hung in the air but dust. The town was bone-dry, an empty glass. He had drank down everything it had to offer a long time ago. It was a place, nothing more.



Scott's house was on the edge of town, a huge place for a single man, with a white barn and a three-car garage. A piece of paper taped to the door: "Out at Dad's." So he drove back down the highway in the dark, back down the county road and turned into the old gravel driveway. Lights on everywhere in the house. All as it had been. So many nights. He remembered driving down the road drunk and thinking this is home, *home*, and he remembered driving in clear-eyed and heartless about everything, the light in the house turning inside him like a knife, a feeling he would use to cut himself free.

Park in front of the garage. Up the porch steps. The old screen door. The kitchen table. The family room smelling of cigarettes. Pall Mall straights.

He found Scott in their father's bedroom, surrounded by shoes. He pulled himself up to shake David's hand, a heavy warm grip, matching the solidity of Scott at 32, the short stocky legs, the powerful chest behind the sweater. The same boyish charm lit his smile, but it seemed to float at an odd distance. He settled back onto the floor and David noticed a crown of thinning hair.

"Five pairs of black dress shoes," Scott said. "Six pairs of brown loafers. Our father was Imelda Marcos."

David sat on the edge of the bed. He looked at the strewn about penny loafers, oxfords, zip-up Beatle boots and the thought their father was truly dead settled on him with a blank finality. Dead. Their father.

"You want any of these," Scott said, "they're yours."

He shook his head and, after a moment, managed to add, "Maybe a sweater."

His brother swept the shoes into a pile beside a cardboard box. "I'll take care of this later. Let's get a beer."

The risen moon outlined the hill, the solitary tree, the edge of the field in a rim of frost. Scott turned out the lights behind them and they sat on the porch in the dark.

"It's a little cold for this."

Scott laughed. "I knew California would turn you into a pussy. This is not cold, bro."

David remembered the way neither his brother nor his father would wear anything heavier than a sweater until the snow fell, a stubborn refusal to give into the long months ahead. He settled back into his creaking chair and stuck his hands into the pockets of his jacket. His brother held his beer between his legs and didn't move.

"You doing all right?"

"Oh yeah. I mean, you know ..." Scott stared at the hill and the moonlit creek. "That priest. I should have thought to call him ..."



“Don’t worry about that.”

“I don’t. I just want everything to go all right — there’s a lot of people coming to the funeral, and —” He shrugged and drank his beer.

“I’ll take care of it. I’ll talk to him. You’re handling everything else.”

“Thanks. I can’t stand him.”

He sipped from the beer and settled his feet on the railing, avoiding David’s eyes.

“He had old Mrs. Skarsrud over here. Cooking her a steak on the grill. Who knows what he had planned after that. It was about one in the morning. He told her he had a headache and then he falls sideways on the couch. She calls 911 and I’m on call for the ambulance, can you believe that? Ten years as a volunteer fireman and I’ve never done anything more important than put out ditch fires, and now I end up taking him into the hospital.”

He shook his head as if he still couldn’t believe this had happened.

“Anyway, I was the driver. I was supposed to be driving, but I got in back with him and I’m talking to him. Just talking. Shit, I don’t know if he can hear me, but it just seems like I should say something, and then he reaches up and he sort of grabs for my shoulder, and he’s still got a grip, just about crushes me. I take his hand and he squeezes the hell out of it, and then we’re at the hospital. Doc Christianson came and gave me the news about an hour later. I had them pull the curtain and I spent a little time with him, but you know, that’s just nothing. It’s not like they’re sleeping. It all goes out of them, right away. You can see it.”

“I think —”

“So I call you and I come back here and I never think to call the priest.”

“Don’t worry about that.”

“I’m not ... Man.”

They drank and watched the moon. Watched the moon and drank.

“You know the last time I saw him we went over to Cormac’s,” David said.

Scott nodded. His brother’s face was still young, soft and round, with round lively eyes and a broad, solemn forehead. “Eight years ago. I was out of town.”

A smile, but the last words said a little too flatly. I’ve been gone too long, David thought. Give it time. It’ll be all right.

“Yeah ... I went out to look at the Old ABM site. Somebody at Universal thought it might make a great fortress at the end of the world for this bad thriller they were trying to put together. Anyway, I stayed in the motel but I stopped by and we ended up going to Cormac’s. That was when the doctors had told dad he



had to cut down and he was trying to ration himself to six cigarettes and one whiskey a day.”

“The *first* time they told him to cut down.”

“I suppose. Anyway, we’re there, sitting at Cormac’s bar in the basement, and you know how it is: every time my drink gets one inch below the rim, Cormac fills it. I’m drinking whiskey and water and pretty soon I’m not drinking anything but whiskey and we’re arm wrestling and Cormac about kills me, and when I can’t see across the goddamn room and he’s talking about taking out the shotgun, I figure it’s time to leave. Dad’s been milking this one watered down rum and Coke all night.”

“He did that for awhile.”

“I’m driving because he forgot his glasses at home. He’s blind. I get us down to the first corner and then I’m sick. I’m leaning out of the door heaving my guts out, and he says, ‘Davey, what’s a matter? Are you *drunk?*’”

Scott laughed.

“I say, ‘Damn right I’m drunk. I’ve been drinking straight whiskey for three hours with your damn friend.’ And he says, ‘Well, you better let me drive.’ And I say, ‘You can’t drive. You’re blind!’ And he’s sitting there, happy as a little kid, like he can’t believe it, and he says, ‘Yeah, but Davey, I’m *sober!*’”

They laughed together and it wasn’t funny. David found it still wasn’t funny.

Scott said, “Might have been the only time he ever came back from Cormac’s sober.”

“Might have been the only time anybody ever came back from Cormac’s sober.”

“You know, when his eyesight first got like that? The doctor told me they think now that might have been a first stroke.”

“Really?”

“Yeah. They say that now. When it doesn’t matter.”

Scott finished off his beer. He glanced at David’s still half full bottle and disappeared into the house. David closed his eyes and thought he could hear the warmth exhaled slowly from the

earth. He was freezing.

“How are things in LA?” Scott said, settling back in his chair. “Everybody getting rich?”

“Not me. Everybody else”

“The whole country’s getting rich. Except here,” Scott said. “It’s okay to be greedy. Hell, it’s good for the country. It should be the best damn time in the history of the world to be a thirty-two-year-old white guy trying to make money. But we’re sinking here. You want to make a dime in this town, you pretty much gotta squeeze it outta someone a penny at a time.”

Scott was invested in half a dozen ventures, the seed plant on the edge of town, the video store, a bean cooperative David didn’t completely understand. He realized he actually didn’t know if his brother was doing all right or about to go under.

“The farm economy is countercyclical,” he said.

His brother swigged his beer.

“If that means it doesn’t make any sense, you’re right.”

“You know what it means.”

“Economics? We don’t got economics here, brother. You don’t have economics on the plantation. We barely got barter. Anyway, it sucks and day-after-tomorrow we bury the old man.”

That left them drinking for a bit.

“You know, Camille is back in town,” Scott said.

David listened to the trees creak in the wind. It was too cold to be out here. He wasn’t going to let his thoughts slide outside the radius of the yard. He was back for a week and then gone. He was long gone and this was a parachute drop to the natives. He was less than history, he was a rumor, a forgotten name in the yearbook, a ghost that would appear at an open grave and then disappear before you could be sure what you’d seen.

“Lots of people like to see you,” Scott said.

“I doubt that.”

His brother laughed. “Well, a few.”

Scott drained his Budweiser — Budweiser! —

and stepped through the door into the kitchen. He held two bottles between his fingers when he returned.

“You know she’s divorced.”

“Yes. I know she’s divorced.”

“Still a good looking woman.”

“If you don’t shut up. I’m going to kick your sorry butt off this porch and down the hill.”

Scott laughed again, held his beer up toward the stars, so clear in the unblemished air they hardly seemed to blink.

“My brother’s *baaack*,” he announced.

David visited the priest and, four blocks from the church, decided to walk the rest of the way to the funeral home. He was surprised at his pounding heart, his shaking hands. He parked in front of the bakery and made himself stroll down Main Street.

The sun was warm. It was one of those bright, still autumn days when the colors are crisp and yet soft at the same time. There was a single elderly woman coming out of Holvig’s Drug down the street. No one else around. He walked past the empty windows of the old Sears Catalog store, then the broader dusty plate glass of what had been the Coast to Coast store. He stopped, cupped his eyes and stared through the dust at the empty space inside, remembering how they had kept the pup tents and BB guns in the farthest corner. Of course, it had seemed much bigger.

Ashberry’s cafe was still open. The drug store. One hardware store and a new video rental shop. But a third of the storefronts seemed deserted and another third seemed to be gift shops, the kind that featured hand-knotted potholders and carved letter boxes and would be lucky to average two sales a day. From the prosperity of his early childhood, to the collapse of the 80s, the town seemed to have slid into a threadbare but graceful sort of retirement. A dignified surrender to reduced circumstances.

He remembered when he had thought this street was the center of the world, and then when he had been painfully aware it was not.



—D. Koeck





There might be nothing easier in the world to despise than small-town shopkeepers, and he remembered clearly when he had hated the men and women running the businesses here, their Civic Clubs, their Crazy Days and Moonlite Madnesses. It had all seemed like puffing, preening self-importance to him, a kind of flat-earth society that insisted in putting this infinitesimal dot at the center of the universe.

But now he understood it for what it was, a desperate attempt to stave off the jackbooted march of the country toward bigger and better. Toward this day. Now, too late, he wished them well.

His brother was standing on the porch of the funeral home taking a breath of fresh air.

“There’s nobody in there right now. But they’ve been coming by all morning. How’d it go with Father Otto?”

“Fine. No problem. The ladies are serving coffee and cake downstairs.”

Scott nodded, let out a breath. They stood together, looking at the Sons of Norway hall across the street.

“Nice day,” Scott said.

“Well. I suppose I should ...”

“Sure. They did a good job with him. I mean, they put a little makeup on, but I guess they have to. It’s kind of an old

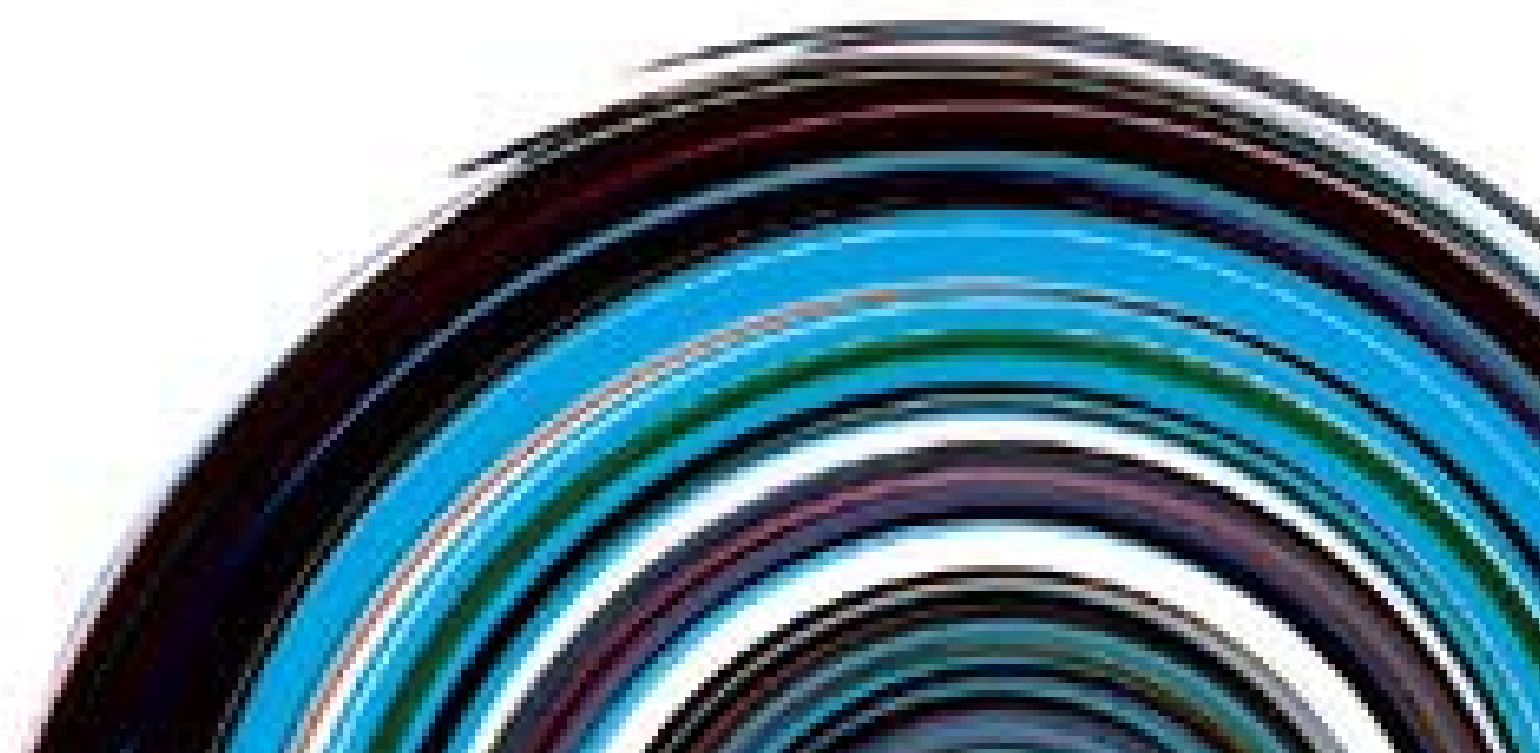
suit.” He shrugged. “But it was the best that fit him.”

“I’m sure it looks fine.”

“Yeah. It’s not like it’s going to be on display for a real long time, right? I don’t suppose the worms care.”

Scott’s laugh sounded like pieces of sandpaper rubbing together. David opened the door and followed the hall to the viewing room. The casket was mounted on a table hung with folds of red velvet. Passing the empty folding chairs, he wondered at the color. A kneeling stool waited at the front of the casket, but he stood, placing his hands on the cold blue stainless steel.

His father’s flesh had fallen away and his nose was hawklike, his cheekbones severe. Lips the color of dried blood had been fashioned into what was supposed to be a neutral line, emblematic of repose, but looked to David like a frown he remembered from his childhood, one of vague dissatisfaction, as if his father was waiting to discover what it was that was going to irritate him. Except, of course, it didn’t seem like his father lying there at all. The body was shrunken, smaller and echoed hollowly within his own chest. Like saying good-bye to a statue: that was Hemingway. But what it felt like was saying good-bye to a collapsed balloon. He noticed the gleam on the folded hand and was astonished to see the wedding ring there still, after all these years. He considered it and reached out to touch his father’s hand. He made his fingers linger. What he felt reminded him of the dissected animals of biology class, the chemical dampness of bottled flesh. Surprisingly cold. He turned and walked back down the hall and out the door, past his brother, and out onto the sidewalk and down the street into the sun. ~~~~~





spintronics

Behold the mighty electron.

One of the tiniest particles in the universe, long appreciated as an amazing carrier of electrical charge, now discovered to be even more capable.

It spins.

And that spin can be used.

Based on a concept so new many scientists don't fully understand it, spintronics has already dramatically changed the way we compute. In the next decade, it may prove the key to the quantum world where computers continue to astound.

Electrons are mites of matter that spin madly around the nucleus of an atom. In traditional electronics, electrons are used to carry an electrical charge or information from point A to point B. In spin-electronics, known as spintronics, the actual spin of the electron carries the information. When applied to computer technology — something that is already being done — spintronics dramatically speeds processing. Less energy is required to control an electron's spin than to push a charge through a computer's semiconductors.

Since 1998, spintronics has caused computer hard drive storage capacity to grow by leaps and bounds. And it's been the key to developing today's super-slim, super-powered laptops. But as in all new science, there's room for improvement. Scientists at North Dakota State University are employing their expertise in polymers to develop spintronic materials more flexible and less expensive to produce than the materials in use today.



By controlling the electrons on and off, you can actually build a computer.

NDSU assistant professor Qun “Treen” Huo and doctoral student Zoha AL-Badri are seeking two different solutions to the problem. Huo, who joined NDSU’s faculty in 2001, is using supramolecular engineering (she builds extra big molecules) to create ferromagnetic thin film materials. “Ferromagnetic materials are one of the most important parts in spintronics,” Huo says. A ferromagnetic material can be magnetized in a magnetic field and retain its magnetism when the field is removed.

Magnetism is key to spintronics. The angular spin of electrons makes them act like tiny bar magnets. “An electron, from a quantum physics point of view, has two

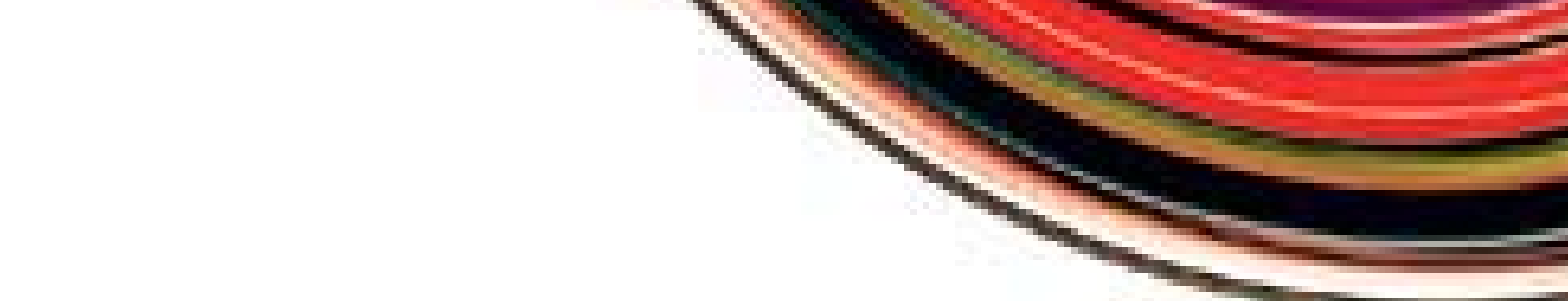
spin states. It’s either pointing up or pointing down,” Huo says.

The upward spin can be used as an “on” switch and the downward spin can be used as the “off” switch.

“By controlling the electrons, on and off, you can actually build a computer.”

Ferromagnetic materials are essential to building what might be called a spintronic sandwich. In the late 1990s, French scientists advanced spintronics by a giant step when they layered iron and chromium, exposed the materials to a magnetic field and watched all the iron atoms flip in the same direction. They labeled the phenomenon “giant magnetoresistance.” IBM first employed giant magnetoresistance in a hard disk in 1997; hard-disk capacities have doubled every year since.

Basically, Hou and AL-Badri are trying to build more pliable, less costly “bread” for the spintronic sandwich. “Laptops are all based on inorganic semiconductor materials, which are brittle,” AL-Badri says. “If you drop your laptop, it is going



to break, because it's a rigid system. For that same reason, your hard drive might not withstand vibration or a power surge." Organic ferromagnetic materials will be flexible, plus they'll be cheaper to reproduce than today's silicon wafers.

The new and improved spintronic sandwich might still have metal in the middle to act as a conductor; or it might be filled with a non-conductive, insulating material; or it could be centered by a semiconductive material. Hou and AL-Badri's research is focused on creating organic ferromagnetic materials for the top and the bottom of the sandwich.

Hou has found that when she exposes her super molecules to certain solvents, the molecules assemble themselves into a single layer, with all the electrons pointing the same direction. Her research group is now conducting characterization studies on this thin film material and, Hou is happy to report, "We've had some obvious magnetic responses."

AL-Badri's research appears even more promising. "I don't want to put too much emphasis on it but ... I am very, very excited. At this stage, I'm optimistic that

we are going to make a very good breakthrough in the field," he says.

The key ingredients in AL-Badri's research are polymers. "A polymer is like a big chain that connects repeated units of molecules, which act like hooks. By adding different functional groups to the hooks, you can change the physical and chemical properties of the polymer. We start with a polymer material, then we functionalize it to get the properties we want."

If things turn out the way AL-Badri thinks they will, a patent is definitely in the future. It would be the ninth patent for AL-Badri's adviser, Philip Boudjouk. Named NDSU's vice president for creative activities and technology transfer in 2000, Boudjouk is an expert in organometallic chemistry. He's principal investigator on the NDSU spintronics project, which is being funded by a \$1.75 million grant from the Defense Advanced Research Projects Agency.

Overall leadership in that agency's spintronics

research is being provided by a core group of three California universities: University of California Los Angeles, UC Santa Barbara and UC Riverside (dubbed the Center for Nanoscience Innovation for Defense). NDSU and the University of Alaska Fairbanks were invited to partner in the CNID research. The test results AL-Badri is so anxiously awaiting will come from UC Santa Barbara.

Spintronics is making life in NDSU's Research and Technology Park very interesting. The technology is so prized, its potential market value is estimated at hundreds of billions of dollars a year. And then there's that priceless commodity called credibility.

"If you have a really popular research area, we call it a 'hot' area," Hou says. "If you can succeed in that type of area, then definitely people will pay attention to you. They not only watch your group, they watch the whole university."

— C. Jelsing



I'm optimistic that we are going to make a very good breakthrough in the field.

AN ALIEN LANDING





Groundbreaking ceremonies were held Oct. 13 to celebrate the impending construction of Alien Technology Corporation's manufacturing plant at North Dakota State University's Research and Technology Park.

They'll be making: Radio Frequency Identification tags.

Also known as: RFID tags.

In simple terms: RFID employs an integrated circuit, a small silicon chip, attached to a small, flexible antenna creating a tag. The integrated circuit provides data storage to record and store information. A reader sends a signal to the tag. The tag absorbs the energy from the reader signal and then transmits a return radio signal containing information from its memory. The tags are expected to eventually supplement or replace bar codes that now track inventories of all types of commercial products.

The silicon chips are small: nanotechnology small. The size of a pepper flake.

They'll be employing new ways to make stuff: Alien Technology has developed and holds exclusive patent rights to a manufacturing technology called Fluidic Self Assembly, an efficient way to place and package lots of very small integrated circuits for assembly into RFID tags.

This is how: In fluidic self assembly, specifically shaped integrated circuits ranging in size from 10 microns to several hundred microns are suspended in liquid and flowed over a surface that has correspondingly shaped "holes" or receptors on it and into which the devices settle.

It's not big brother: The tags don't work very well on liquids, and humans are mostly water. Also, there are principles that call for the data to be completely erasable and the tags can be removed from products.

Alien likes North Dakota: The company was already working with the NDSU Center for

Nanoscale Science and Engineering. In addition, they were impressed with the state's capable and stable workforce and North Dakota's business friendly environment.

They're going to make a whole lot of tags in Fargo: The plant, scheduled to begin production mid-2005, will eventually have two lines with the capacity to produce 10 billion tags a year on each line.

Lots of people will be hired: Estimates are that 300 jobs — primarily manufacturing jobs along with related support positions — will be in place by 2006-2007. People may get a jump on the applications by e-mailing a resume to fargojobs@alientechnology.com. Hiring is likely to begin the second half of 2004.

RFID is expected to grow rapidly: It is a brand new industry, and demand will be in the billions of units creating tremendous opportunities. The RFID industry can now provide low cost products that are standardized to enable greater adoption.



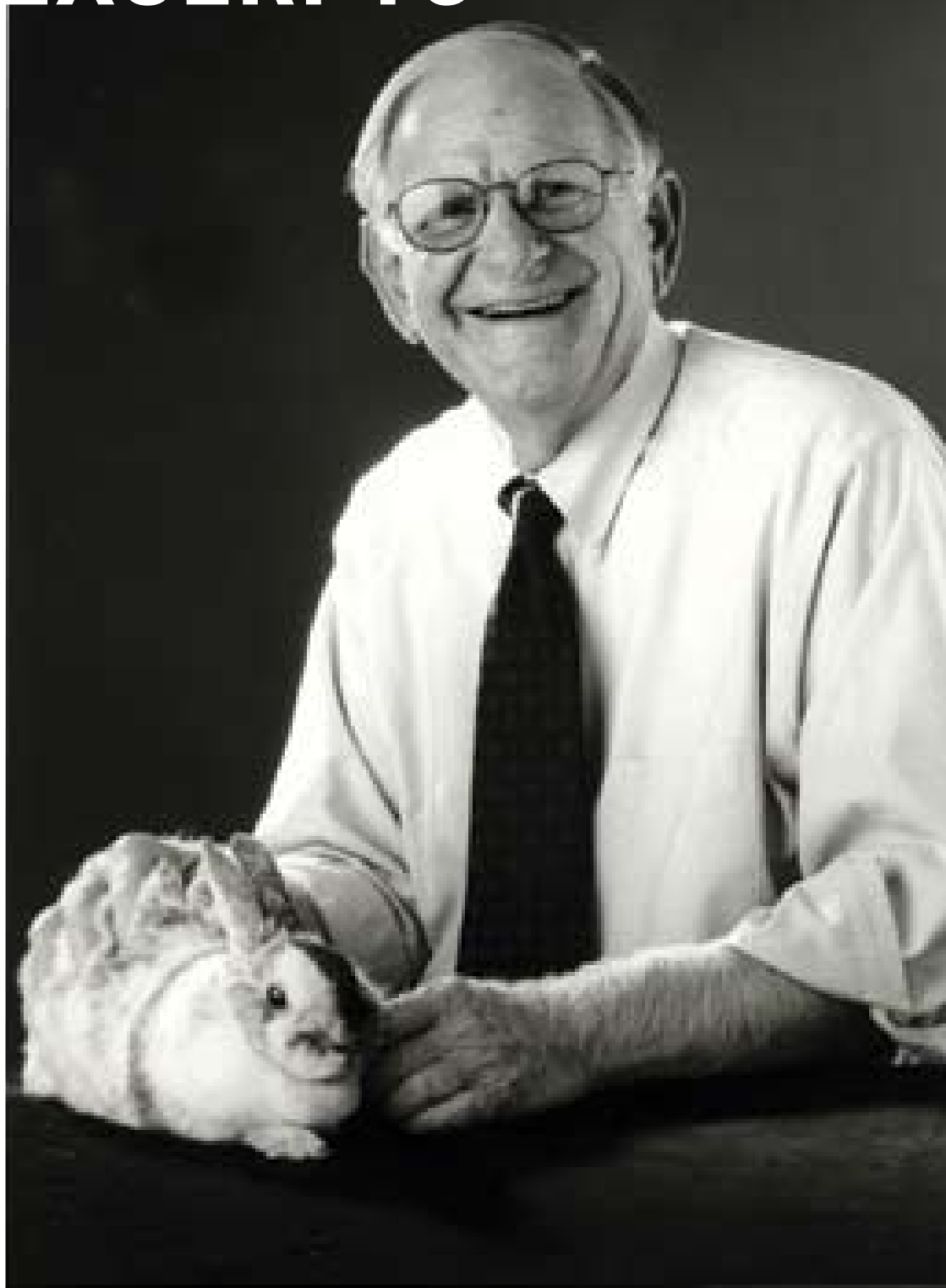
JOSEPH A. CHAPMAN

PRESIDENT *North Dakota State University*

Joseph A. Chapman took over his duties as North Dakota State University's 13th president in June 1999. He loves the job. There's a bounce in his step and a gleam in his eye and he simply does not accept the notion of obstacles. On cold days, he wears an extra muffler, a metaphor for his approach, perhaps: just layer on an extra bit of plaid wool and roar off to the next thing. He does not like to hear about the weather, though. He does like to hear about progress and energy. He loves to see an NDSU athletic team win, but he is equally proud if the team goes down swinging, because both ways the students show class.

Chapman has held positions at Montana State University, Utah State University and the University of Maryland, College Park. He studied for his bachelor's, master's and doctorate from Oregon State University, Corvallis. As a biologist, his area of specialization is lagomorphs, which are, precisely, plant-eating mammals that have fully furred feet and two pairs of upper incisors. Or, more generally, pikas, hares, and rabbits.

EXCERPTS



— Leo Kim

All I try to do is create an environment where people can be successful.

What we've seen here is a lot of people who have been living with a pent up energy. We're seeing a lot of talented people moving to the next level. And it's infectious.

It's helped that I have held every administrative position in a university, so I understand what the issues are. That gives you a tremendous tool to work with. My responsibility is to make sure others have the tools they need.

When people are succeeding and meeting their own goals, I get energy from them. They give me a lot of enthusiasm.

My main goal is to keep the energy level high, and then we'll continue to move.

Naysayers? There are lots of those. People fear we're moving too fast. I try to listen and talk to them, and sometimes I can convince them. I hope they always feel they're treated with respect.

Don't ever lie, no matter how painful. Tell me what the rumor is and I'll tell you the truth.

North Dakotans care deeply about higher education.

What's different between North Dakota and Nebraska, except attitude?

The university is becoming a critical economic engine to attract business.

North Dakotans like to be understated.

I never doubted that we would be a good choice for Alien. I think the advantage we had is that we had a lot of people who really understand that this was a crosscutting technology that would redefine microelectronics and computer science and a lot of other applications like inventory.

The two big questions I get most of the time are about Alien and what a great thing it is for the state, and the second thing is all about athletics. Those are the things that people talk about a lot.

Am I really a football fan? When I was at another institution part of my job was to pace around with the president telling him it was going to be all right knowing that it wasn't going to be all right. Here I have others to do that for me.

I do believe athletics is an integral part of campus life, and because of that it's imperative that we be Division I across the whole campus. We asked every area of campus to define and talk about moving to the next level. If they think they're at the level, no penalty for that. But for athletics, I think it was obvious and clear in their minds as they went through that process.

For me it's about seeing other people be successful. I do recognize that I'm privileged to be here at a time of incredible transformation. You have to be careful when you talk about that because a lot of people who went before you were also involved in the transformation, but having said that, there are clearly identifiable milestones in the history of institutions and we're in one of those now.

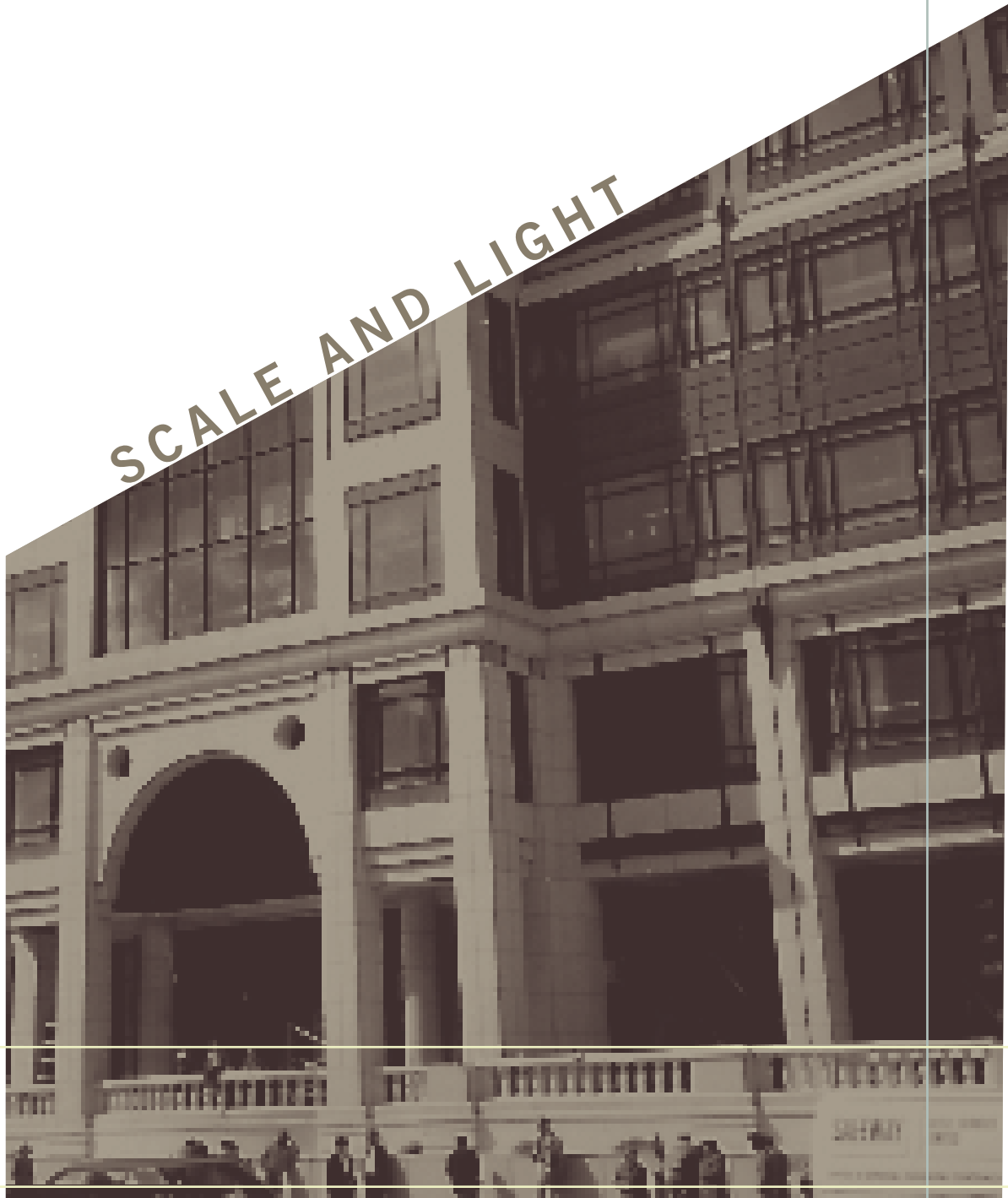
When I came here this institution was in very good shape. We're now developing a base of a true national research university, and that's a transforming thing for an institution. Quite frankly there are a lot of people out there across the country who are almost astounded at what's happening here.

North Dakota has a tremendous amount to offer.

I have visited every county in North Dakota. The perception is that North Dakota is this big monoculture, and it's not. North Dakota is an incredibly diverse place. If we have a weakness, it's how we market ourselves, but that's improving.

SCALE AND LIGHT

Building photographs provided by Doug Hanson.





In 1968, Dickinson, North Dakota, had a single architectural firm. One day a curly-haired boy of 10 walked in the door and asked to buy a kit so he could make a model of a building.

The architect gently informed the boy there is no such thing as a model-building kit. Professional architects use sticks, blocks of wood and cardboard to create models from scratch. The boy went home, gathered materials and glue, and built a replica of the dentist's office next door.

He built more models. He imagined majestic cityscapes and far away lands. He knew in his heart he wanted to shape the look of the larger world.

But first, the western Dakota landscape taught him about space. Farmsteads and ranches instructed him in design. And summers spent on his grandfather's farm near Minot, brought him closer to both.

He studied drafting in high school. On Saturdays he worked for an architect. And then, stretching as far from home

as he thought he could, he enrolled 280 miles away at North Dakota State University in Fargo. When he graduated in 1980, Douglas D. Hanson was one step closer to the world of his dreams.

The architectural firm known as Hanson takes up a cluster of rooms in a modest office building at the corner of Westwood Boulevard and Tennessee Avenue. The main drag is palm-lined Pico Boulevard, extending west to the ocean and east into the pervasive tangle of Los Angeles.

Hanson's crisp dress shirt works like camouflage with the pristine walls of the front conference room. Against the white, his tanned face, sparkling blue eyes and curly hair stand out. When he looks you in the eye — and he does look you in the eye — his gaze is welcoming, curious, thoughtful. One gets the impression he's more comfortable listening than talking.

Walking through the open office area,

he waves his hand over computer stations where young men manipulate images on oversized computer screens. Hanson prizes his five-person staff — which includes his wife, creative director Donna Moragne Hanson — as much for their inventiveness and outside artistic talents as their technical abilities.

Models of buildings and other structures cover tables and clutter shelves. From them one can detect Hanson's style: sleek, curvilinear, efficient, functional. "The spatiality and simplicity of the North Dakota landscape is still beautiful to me, and the farmsteads are so utilitarian, they are like wonderful little villages." Efficient, aesthetic and refreshingly un-designed, those farmsteads have a composition that works for Hanson.

Within the firm's intimate office space, Hanson's invitation to be creative extends beyond his staff. An itinerant screenwriter occasionally drops in to scribble his dialogue, while a resident preschooler builds block monuments that spill out the front door and into the open-air courtyard.

Like any artist, Hanson's work is inspired by the sum of his training, experience, surroundings and relationships. "I know what an architect does," Hanson said, "and I prefer to hang out with artists, writers, sculptors, painters. If your projects have these other influences, and you understand people's emotions, it connects your work to a bigger realm of people."

The firm exists because, at age 40, Hanson decided to captain his own ship. He'd worked for Bruce Graham and Frank Gehry — two of the world's most respected architects — and he wanted his own

turn to design major buildings.

"You step back to get a better leap forward," Hanson said. "At some point Graham and Gehry decided they could do this and they surrounded themselves with people who could help them get there. I had been one of those people and I decided I was up to the challenge of seeing who I was and what I could do."

The young man from western North Dakota always knew he wanted to design and build skyscrapers. So, in 1984, after attending graduate school in Denver, Hanson charted a course for Chicago.

Portfolio in hand, head full of dreams, he arrived in the city center at about 11:30 at night. "There were people everywhere; the streets were full. I got out and walked around. I loved the intensity and complexity of it," Hanson said. Here, he knew he could be happy. Here, he hoped to do great work. He began looking for jobs and applied to the very old, very prestigious firm of Skidmore, Owings and Merrill. By the time he'd returned to Denver, Skidmore offered him a job.

It wasn't long before the international architectural scene Hanson envisioned as a child became his professional reality. But the brass ring wasn't quite what he'd expected.

"I went to Skidmore, Owings and Merrill thinking I was going to learn how to build big, important buildings, using the newest technology, but when I arrived I found out those people were all gone and this was the new generation.

“I know what an architect does and I prefer to hang out with artists, writers, sculptors, painters. If your projects have these other influences, and you understand people’s emotions, it connects your work to a bigger realm of people.”

They put their energy into decorating the skin of the buildings and not developing traditional architectural elements, like scale and light,” Hanson said.

Still, he benefited from the mentorship of Sears Tower-designer Bruce Graham, and — in the early 1990s — Skidmore, Owings and Merrill led him to Frank Gehry.

Graham and Gehry had both designed buildings for the Olympics in Barcelona. As project architect for Skidmore, Owings and Merrill, Hanson worked closely with Gehry, who was puzzling out how to build the round body of his Vila Olimpica Fish Sculpture. Gehry became the first to use computer-aided three-dimensional interactive application, or CATIA, in an architectural project. The computer program was originally developed for the French aerospace industry and is now an indispensable tool for producing curvilinear buildings.

The Olimpica Fish was the first of the complex, curvilinear structures that are now Gehry’s trademark. Hanson’s own penchant for sculptural forms is rooted in “rethinking how buildings are built. The curve in my work was a manifestation

of that,” Hanson said. “The whole challenge was trying to build it for the same money or less than everyone else was getting for a traditional building.” Gehry proved it was possible.

Gehry eventually persuaded Hanson to leave his beloved Chicago and move to California. As a senior associate in Gehry’s office, Hanson led a number of projects as either project architect or senior designer, including the Guggenheim Museum Bilbao in Spain; the Samsung Museum of Modern Art in Seoul, South Korea; and Weatherhead School of Management at Case Western Reserve University in Cleveland.

When Hanson made the pivotal decision to design his own buildings, he said good-bye to Gehry and joined forces with a smaller California firm. But it turned out to be a transitional relationship.

So, the Hansons moved to Fort Collins, Colo., but the chemistry wasn’t right; not for their firm and not for family. So Doug and Donna Hanson and their four young sons moved back to Los Angeles to re-establish a home and their own business.

Place is important to the Hansons. Donna, also an architect (she was one of Doug’s officemates in Chicago), grew up in Chicago and — like her husband — prefers an urban lifestyle. They’ve also found Los Angeles to be a good place to raise Jordan, 11; Dillon, 9; Kylan Justis, 8; and Cameron, 4.

When Donna stops in the office with Cameron to pick up some work, her husband is using a polished wood stick to point out key features of current and recent

Hanson projects. It’s evident the firm has been busy.

Hanson is one of three architectural firms working on a \$370 million-project for the California Academy of Sciences in San Francisco. Plans are to raze the current structure and replace it with a new one in Golden Gate Park. Hanson wrote the building program and designed the interiors of the administrative and research areas. Lead design architect is Renzo Piano and his Building Workshop, based in Paris and Genoa, Italy.

Hanson designed the academy’s research areas so visitors can observe scientists at work. “Part of it was to show that the academy is more than just the public floor. In the new academy, there will be more transparency,” Hanson is quoted in an article in the Marin Independent Journal. As a prelude to the renovation project, Hanson designed an exhibit for the academy titled “150 Years of Science: Exploring Nature’s Wonders,” which is on display through December.

The one thing Hanson’s clients can count on is that he will listen to them and he will draw on the expertise of a wide range of people to accomplish the clients’ goals. He’s completely devoted to the idea of collaboration, to the point that it might seem like he’s the one doing the hiring, not the client.

“For me, one of the most important things is working with people who ‘get it,’ who are willing to be risky and are willing to share. The way I work is emotional. I need to work with people who are willing to share their emotions.” That doesn’t mean Hanson holds hands and chants; it does mean he wants to



spend
time with
his clients.

“Doug is certainly the most personable of all the architects we’ve dealt with,” said Dave Kavanaugh, director of research at the California Academy of Sciences. “That’s not to say the others are awful, but Doug is always very friendly and easy to talk with, and usually you will see what you talked about reflected in the next iteration of his designs. You don’t always get that from others.”

When Hanson was asked to transform a former furniture-cushion-manufacturing-house-turned restaurant/night club in Denver into an edgy, efficient advertising office, he spent nearly a month observing and interviewing the staff. Hanson’s approach was perfect for an organization that emphasizes collaboration, said former

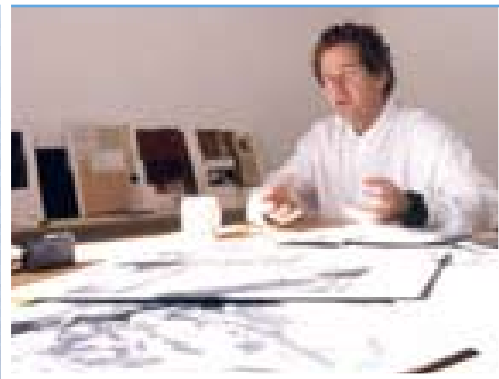
Barnhart/CMI
Advertising president

Dan Igoe.

The end result was “fabulous,” Igoe said. “He took this non-functional basement and turned it into the nicest space in the building. Using light wells, he brought in a lot of natural light and connected the three floors to encourage staff interaction.” A Bismarck native and Hanson’s freshman roommate at NDSU, Igoe is now president of Denver-based Pure Brand Communications.

Hanson’s collaborative energy spills into the construction phase of his projects as well. He credits his experiences in Spain for teaching him to value the centuries-old tradition of architect as builder. Every night he dined with those who built the Guggenheim Bilbao, and that made a difference. In Denver, his down-and-dirty approach allowed him to convince skeptical contractors his blueprints would translate easily into real materials.

“When Doug showed them very simply how it would work — and save money at the same time — the contractors really got into it,” Igoe said. Within 120 days Barnhart/CMI was open for business in a new space.



Hanson is ready to tackle international, large-scale projects. He's done it as a design team member. Now he's eager to do it with his own staff. "There is something interesting about the complexity and the diversity those kinds of projects afford."

The opportunity to work overseas may be close at hand. The firm is engaged in its first major residential project, a \$1.5-million home in Beverly Hills. Hanson met the client while working for Frank Gehry in Seoul and he thinks this project could lead to more projects in Korea.

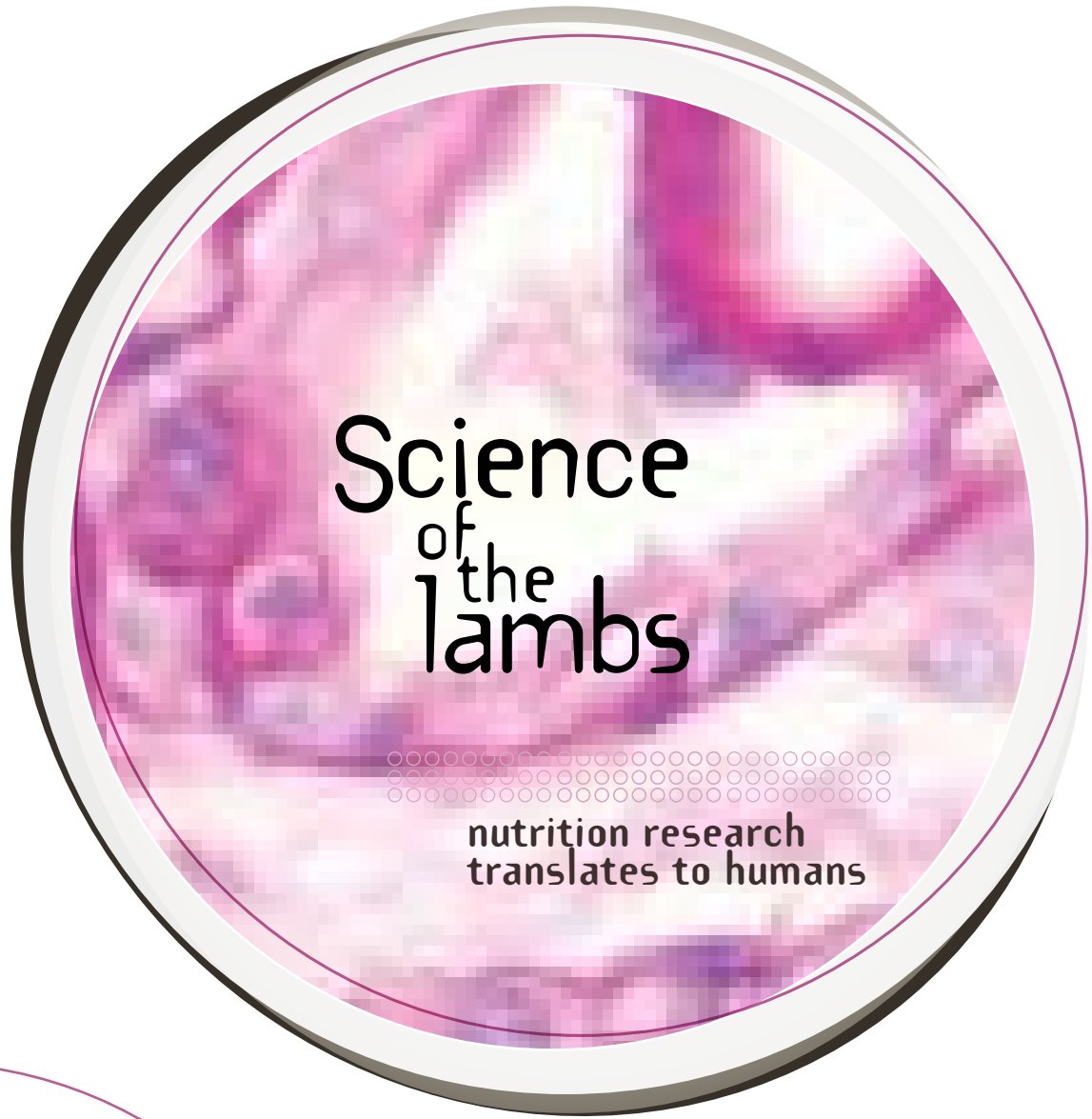
Another past connection, which may change Hanson's future, involves former colleagues in Chicago. They have proposed a partnership. With more than 100 on the payroll in Illinois, Hanson said it would be a quick way for his firm to grow. Issues to be worked out include compatibility and how the companies would merge portfolios. One thing that would not change is the location of Hanson's office. He and Donna will continue

to work out of Los Angeles.

Although Hanson can see himself retiring in Chicago someday — to a John Hancock Building apartment designed by his mentor Bruce Graham — for now California is the place he and his family want to be. They've settled in and have developed roots, especially in the area's ball diamonds. The three elder boys are all All-Star baseball pitchers. Depending on whether the boys are assigned to the same teams, from March to August the Hansons can have up to six practices and six games a week. Donna is often the designated driver.

At this point, the son who seems most likely to follow in his father's footsteps is Cameron, the industrious block builder. But he'd better get going, because in another 20 years, his dad could be leaving some big prints. "You get so much better at architecture as you grow old. The really good architects are in their 60s," Hanson said. "That's when you do great work."

— C. Jelsing



Science of the lambs



nutrition research
translates to humans





[lamb embryo]
6 weeks





For months, doctoral candidate Pawel Borowicz has spent hours each week in a Hultz Hall laboratory, laboring over a computer image.

The picture, composed of lurid pools of fuchsia and blue, resembles a Doppler radar map gone bad. Like what would happen if a blizzard-spewing tornado cleaved right through the heart of a hurricane.

In fact, the image represents something much smaller, and much less catastrophic, than some nightmarish weather system. It actually shows the humble placenta of a ewe – the vivid whorls of color delineating not snow crystals or hailstones, but vessels and tissues.

Borowicz is using a sophisticated image-analysis program to count blood vessels, which are important in determining fetal health. By the ninth month, a healthy placenta will resemble a Los Angeles road map – a complex network of vessels shipping nourishment to the fetus. But if fetal development is compromised, the channels will be far fewer – more like a map of Wyoming. So Borowicz is creating a baseline image of a healthy uterine lining, from which comparisons can be drawn.

His work is just one piece of the university’s new Center for Nutrition and Pregnancy, a consortium of national and international research institutions that will generate data on the ever-growing field of prenatal and postnatal nutrition.

While most of the collaborators’ work is done on sheep, the benefits of their efforts aren’t limited to one species.

Scientists can learn a lot about pregnancy in humans – the effects of certain nutrients on placental growth, the dangers of eating too much or subsisting on Diet Coke – by studying those conditions in sheep first.

Sheep make ideal guinea pigs for several reasons. They are just the right size to house and feed. They share many important reproductive similarities with humans, such as a tendency to bear singletons. And they also are an excellent model for the other ruminant species of the Upper Great Plains, which is useful for animal science research.

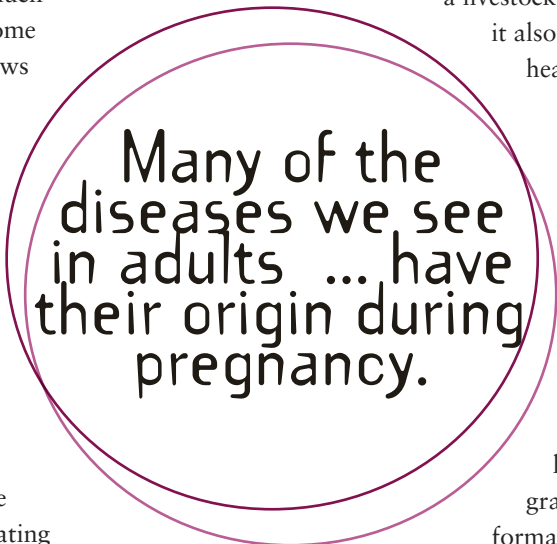
“We’re excited because our data cuts both ways,” says Joel Caton, an animal science professor and co-director of the center. “It answers producers’ questions from a livestock standpoint, and it also answers human health questions.”

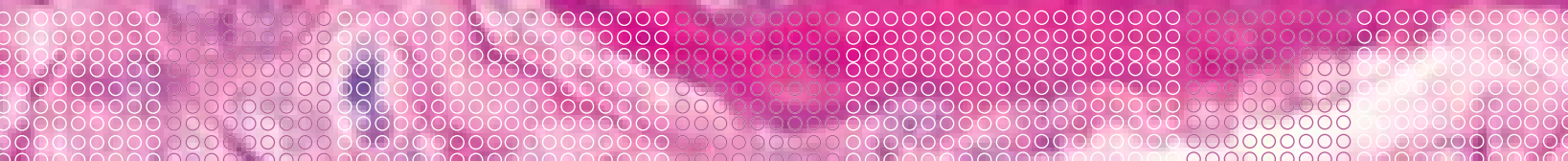
The partnership not only melds expertise and knowledge, it also gives the assorted centers a large, prestigious umbrella under which they can seek large, prestigious grants. “It’s a way to formalize a lot of collaborations that had developed

15 years ago or so,” says Larry Reynolds, also an animal science professor and the center’s other co-director.

Among the collaborators are the University of Wyoming, New Mexico State University and three USDA centers: the Human Nutrition Research Center in Grand Forks, the U.S. Sheep Experiment Station in Dubois, Idaho, and the Biosciences Laboratory in Fargo.

A sixth partner, the Rowett Research Institute for Nutrition





in Aberdeen, Scotland, boasts three Nobel laureates and a worldwide reputation for its work in human nutrition.

All of these collaborators, scattered thousands of miles apart, are drawn together by two men who couldn't seem more different.

Caton is compact, dark-haired, clean-shaven and high-energy; Reynolds is tall, graying, bearded and laid-back. Caton's speech is peppered with words like "Barker hypothesis" and "angiogenesis"; Reynolds prefers to explain science in a more general, everyman's language.

Although Caton's expertise is in nutrition and Reynolds' is in physiology, the two know how closely their disciplines are twined. Both professors understand that nutrition is never more important than in the womb, as it can determine an offspring's health, from its kidney function to the way it stores lipids, long after it enters the world.

The theory echoes a new discovery in the relatively young science of nutrition: The fact "nutritional insults" during pregnancy can program a fetus for problems later in life.

Case in point: At the Rowett Institute, center collaborator Jacqueline Wallace is studying the effects of overnutrition during pregnancy. Wallace and her team have re-created conditions like gestational diabetes in

This area is huge, and it's a lot bigger than me, and it's a lot bigger than the Center for Nutrition and Pregnancy. There's a lot of work that needs to be done.

adolescent sheep by over-feeding them. Once their lambs were born, they had lower birth weights than the progeny of moderately fed sheep. The increased maternal tissue growth actually seemed to take place at the expense of placental growth.

Due to the animal's compressed life span, Wallace and her team now can track how those factors affect the lamb after birth, into adulthood – and after it gives birth to its own offspring.

Conversely, NDSU's joint animal studies with the University of





Wyoming suggest an undernourished fetus has a higher incidence of obesity, high blood pressure and other health conditions as an adult.

“There are really some profound effects of nutrition during pregnancy on the offspring,” Reynolds says. “In other words, many of the diseases we see in adults – cardiovascular problems, diabetes and other metabolic disorders, and reproductive problems – a pretty big proportion of those things have their origin during pregnancy.”

One culprit, of course, is that many women are pregnant for weeks before they realize it. And if we’ve learned anything in the last couple of decades, it’s that good nutrition is crucial in early pregnancy.

A woman needn’t look farther than the next billboard to know she should take folic acid in the first trimester. But the medical world still doesn’t fully understand the long-term effects of, say, mom’s all-protein diet or substances like aspartame. Any of these areas, Reynolds says, would be ripe for study at the center.

Yet another major area of study is selenium, one of Caton’s specialties. He discusses the nutrient with the barely contained enthusiasm of a musician talking about a perfect symphony. “Sometimes you’ll have to shut me off,” he warns visitors.

But even a college biology dropout might be intrigued by some characteristics of this supplement. It’s been well documented that “supra-nutritional” levels of selenium – four to five times the regular amount – can be anti-carcinogenic in humans, reducing the growth of blood vessels in tumors.

Springing off that theory, Caton and Reynolds wondered if the nutrient could also hamper the growth of healthy vessels and tissues associated with gestation. Their subsequent experiments showed that large amounts of selenium did cause smaller placentas and lambs. Time will tell how those lambs will fare in maturity.

Studies like the selenium trials are “just the tip of the iceberg” when it comes to gestational nutrition research, Caton says.

“This area is huge, and it’s a lot bigger than me, and it’s a lot bigger than the Center for Nutrition and Pregnancy. There’s a lot of work that needs to be done.”

— T. Swift



Community wind energy
and energy storage



THEATRE PASSION

ONE GUY SKETCHED A BIT, THE NEXT HAMMERED IT INTO BEING, AND THE LAST PAID THE BILL. What starts as a doodle on a sketchpad can become an intriguing sculpture, a stainless steel rendering of the comedy and tragedy masks associated with theatre. Passersby also believe it looks a bit like an edgy abstract version of the university's athletic mascot, a charging bison.

At any rate, people like the piece. Don Larew, long-time professor of theatre arts, donated the sculpture to commemorate the 90th anniversary of the Little Country Theatre at North Dakota State University.

Todd W. Johnson, technical director for the theatre, did the sketches. Rick J. Woodland finished the sculpture. The sculpture is on the corner of Twelfth Avenue and Albrecht Boulevard.

James H. Critchfield played key roles in both hot and cold wars

When Jim and Lois Critchfield built their new home near the mouth of Virginia's James River across from Colonial Williamsburg, Critchfield christened his boat Tinker Tailor. Fans of mystery writer John LeCarre would know instantly that the other half of that book title was Soldier, Spy. Those two words pretty well summed up the 60-plus years in the life and career of James H. Critchfield after his 1939 graduation from North Dakota Agricultural College.

Critchfield died at Williamsburg, Va., April 22, of complications from pancreatic cancer. He was buried with full military honors a month later at Arlington National Cemetery. What transpired over the intervening decades would constitute grist for a novel by Robert Ludlum. But perhaps not surprisingly, he was a bit uncomfortable talking about those aspects of his life that others would undoubtedly find intriguing.

A book titled "General Reinhard Gehlen: The CIA Connection" by former New Yorker writer Mary Ellen Reese contains this description how that episode of Critchfield's life began:

"... It was a time of paradox. As Gehlen (Adolf Hitler's chief of eastern front intelligence) savored those unreal days, (as the war came to and end) waiting, one man ... rode past on the road far below in a noisy, battered American Jeep, leading a column of tanks that had made the trip through France. It was James A. Critchfield, a 28-year-old veteran of some of the war's bitterest fighting ..."

Although neither man knew it at the time, their paths were destined to cross in the years ahead, with a profound, though initially controversial, effect on U.S. intelligence gathering and foreign policy during the ensuing post-war, Cold War era.

Here's how reporter Adam Bernstein reported it in an obituary printed April 24 in The Washington Post:

"... It was his part in the early days of Cold War intelligence that most recently catapulted him to attention.

"Only in the late 1990s did the CIA begin to disclose, through an act of Congress, its collaboration with former Nazi spies in what was known as the Gehlen Organization. The network was named for Reinhard Gehlen, a German

general who oversaw Adolf Hitler's anti-Soviet intelligence and became the first head of West Germany's secret service.

"For many, Gehlen's work came to symbolize the moral compromises of the United States. Mr. Critchfield, often credited with recommending the CIA's union with Gehlen, defended the work, which supplied the West with an infusion of fresh intelligence material about the Soviet Union and Eastern European countries at the start of the Cold War.

" 'During the Berlin Airlift and other vital moments, such intelligence was hard to obtain,' he (Critchfield) said.

"He added that many of the top Germans, including Gehlen, were far from Nazi ideologues and that many sympathized with those who tried to kill Hitler.

" 'I've lived with this for 50 years,' " Mr. Critchfield told The Washington Post in 2001. " 'Almost everything negative that has been written about Gehlen, in which he has been described as an ardent ex-Nazi, one of Hitler's war criminals — this is all far from the fact.' "

"As the size of the Gehlen group grew to several thousand, many in the organization were reputed to be Soviet spies, former Nazis and other unsavory types used as informants and for other purposes.

" 'There's no doubt that the CIA got carried away with recruiting some pretty bad people,' Mr. Critchfield told a reporter.

"Still, he said his work helped more than hurt American intelligence."

Much later in his life, the CIA honored Critchfield with its Distinguished Intelligence Medal and the Trailblazer award "for significant early accomplishments in clandestine collection and analysis."

Critchfield had entered military service following his graduation from the 'AC as a member of the old horse cavalry. Initially, he served in such places as Ft. Meade, S.D., and Ft. Riley, Kan., ending up, still in the pre-war army, as the very young commander of an all-black squadron of cavalry soldiers.

Minus its horses, which had been replaced by tanks in preparation for a more modern war, that was the unit he took to North Africa. Much to Critchfield's chagrin, and that of his men, in

Shells Isle

(Sunday)-(P)-Pacific fleet
battered Matsuwa island
Friday, causing a
massion ashore and start-
fires. Adm. Chester W.
ported in today's com-

e. 150 Japanese sur-
the bloody conquest of
attempted to organize
y for a banzai charge.
dispersed with mortar
et admiral added. The
were discovered on the
nd of the island, where
resistance ended two
with the Fifth and Third
isions meeting.

also said the Japanese
to booby trap Ameri-

Fargo Colonel In Making River

Haguenau, Alsace-(P)-Red and
yellow smoke screens and pro-
tective machinegun fire so hot it
burned out barrels helped the U.
S. 36th infantry division (the Tex-
as division) Doughboys to root out
the enemy's Haguenau garrison
which fought stubbornly in a
hopeless trap between American
steel and its own minefields.

Explaining the plight of about
300 German soldiers who finally
were driven from a third of the
town on the northern side of the
Mober river, Maj. H. E. Bitt of
San Antonio, Texas, 141st regi-

Berlin Hit 26th

March 13 with
"E" company on
a plank foot-
bridge to take up
positions in five
hours, which was
all we held on the north side at
that time.

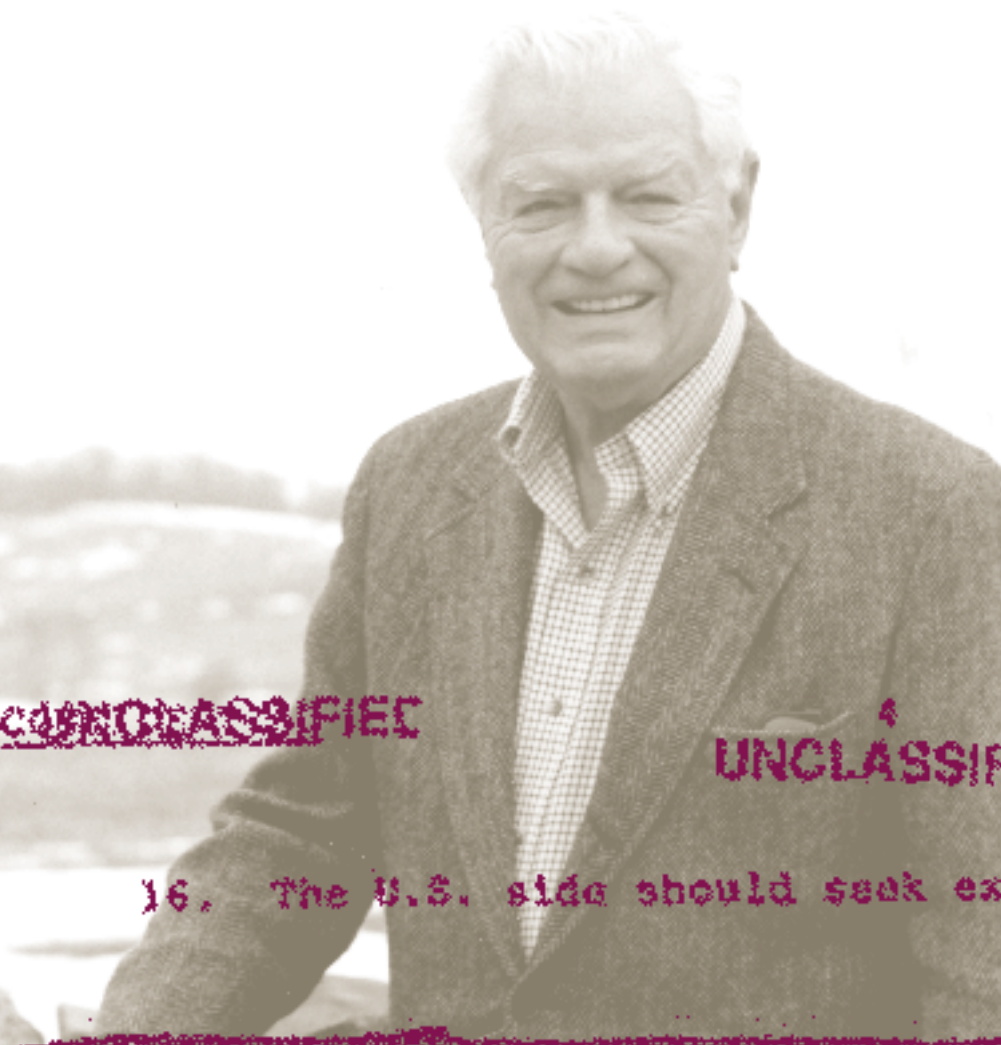


Critchfield
"Our job was to shove the enemy
back so a Bailey bridge could go
in to put tanks across but we knew
we would have an argument and
we got even more than we ex-
pected."

Col. Critchfield is the husband
of the former Constance Taylor,
1253 Eleventh and One-half st N,
and the son of Mrs. R. J. Critch-
wanted to."

Strangely enough -- in view of
the Germans' recent disposition to
quit when the odds were hopeless
--the enemy garrison fought it
out so well it was necessary for
the American Doughboys to clear
out the town house-by-house to
its northern edge so a bridge could
go across the Moder and tanks
roll to join the Seventh army's
offensive.

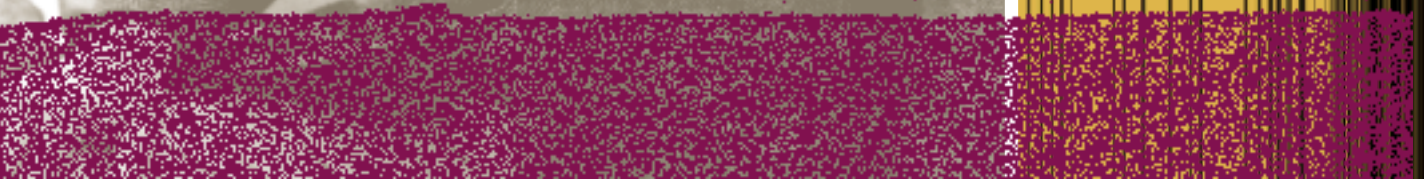
When the 41st regiment's sec-
ond battalion was given the job
of going across the river, its com-
mander, Lt. Col.
James H. Critch-
field of Fargo,
N. D., wanted his
men to have all



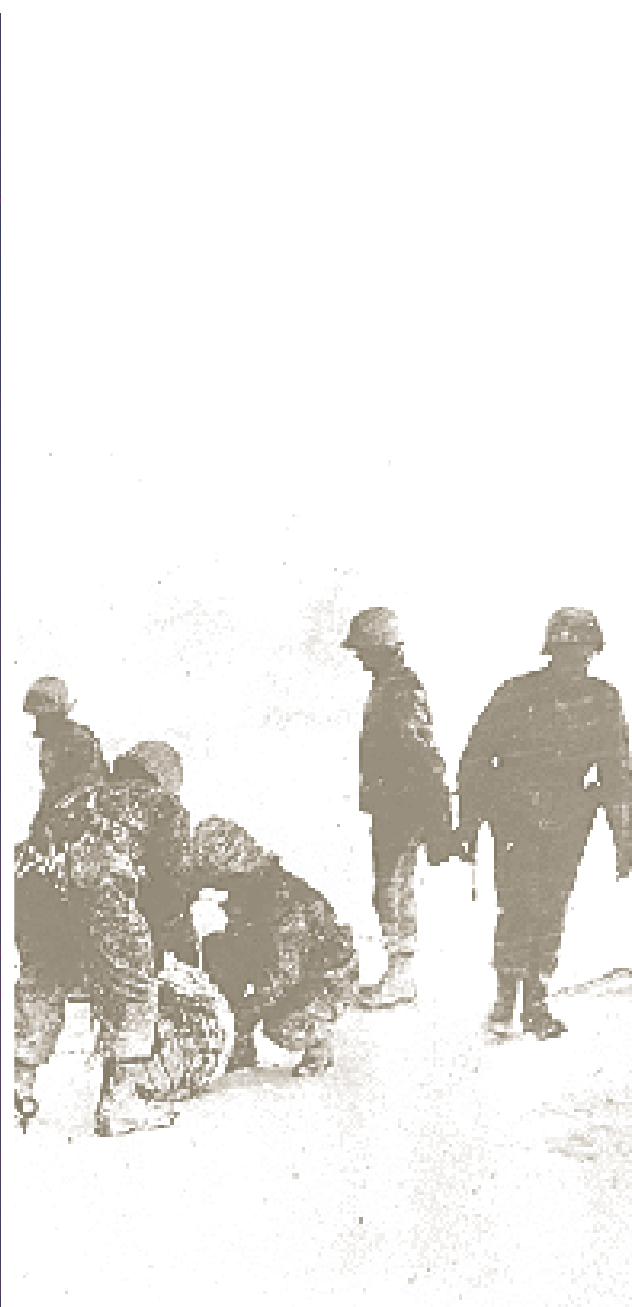
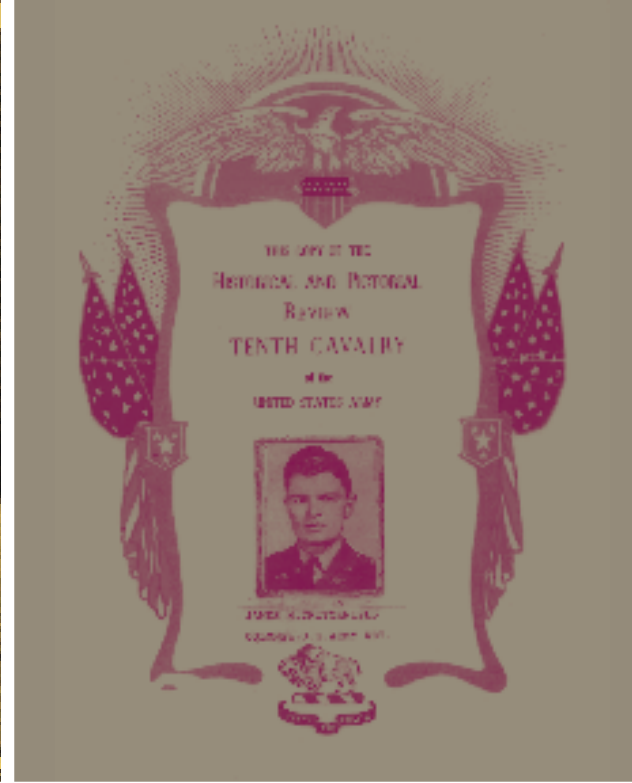
UNCLASSIFIED

UNCLASSIFIED

16. The U.S. side should seek explicit agreement



CIA officer blames trails in Germany



whom he took great pride, while in North Africa, the 10th (black) cavalry was deactivated, and the troops dispersed to other units in preparation for the invasion of Europe.

With the invasion of southern France by Allied forces, Critchfield was by then in command of a battalion of the 141st regiment of the 36th Infantry Division (Texas National Guard). That unit continued to fight its way across France and ultimately into Germany. In addition to decorations won earlier, he received a Silver Star for gallantry in action in the Alsace-Lorraine region of northeastern France.

A citation accompanying the medal states: "On Dec. 12, 1944. About 700 Germans had infiltrated Allied lines, and then Lt. Col. Critchfield put himself in continuous peril against enemy guns to best direct the artillery and mortar fire on the attackers."

Promoted to the rank of colonel, one of the youngest full colonels in the U.S. Army at the time, Critchfield's post-war work with Army intelligence had brought him to the attention of the fledgling CIA in 1948.

The Washington Post obituary goes on to report: "One of his first assignments was to go to Germany and assess whether to keep or end the relationship with Gehlen and his spies.

"He (Critchfield) took several facts into account before successfully recommending to his superiors that they maintain the relationship.

"First was that Gehlen had fallen out of favor with Hitler as the war progressed and had

stored a trove of material on the Soviets as he foresaw the Allied victory.

"Gehlen figured the intelligence would make him useful to the Americans.

"More urgent was that Gehlen's network provided the Americans real-time surveillance of Soviet air operations during the Berlin Airlift.

"The CIA put Mr. Critchfield in charge of Gehlen, and he held that role until West Germany became an independent nation in 1955."

There were occasions, during Critchfield's "undercover" years that classmates, Ann Murphy Thornton and Orville Goplen among them, who were also working in government, reported "sightings" of someone they were fairly certain was him. But he declined to exhibit any sign of recognition.

The Washington Post account continues, "... In the 1960s, as chief of the Near East and South Asia division, he kept tabs on the Iraq coup that led to the Baath Party's rule, regarded at the time as a U.S. victory.

"He remained an active thinker on intelligence in the Middle East. In a 2001 interview with The Boston Globe, he linked the post-war spread of communism with a surge of Islamic fundamentalism and Arab nationalism today.

"I think that the problem of terrorism replaces the ambiguity of the communist threat," he said."

Critchfield retired from the CIA in 1974 and launched Tetra Tech, his own engineering consulting firm, specializing in the Middle East.

Continuing to play a very active role in governmental affairs, he served as a White House energy adviser under Secretary of State Henry Kissinger and on a historical advisory committee to declassify U.S. documents about Nazi and Japanese war crimes. Along with his author/war correspondent brother, Richard, Critchfield was honored by his alma mater with the conferral of an honorary doctorate in 1986, and by the National Association of State Universities and Land Grant Colleges as NDSU's Centennial Alumnus the following year.

During the 1980s, Critchfield and Lois built a home in Fauquier County, the Virginia "horse country" where they lived until moving to the James River enclave in 1996.

"Partners at the Creation," a memoir about Critchfield's post-war years in Germany, was published in September by the Naval Institute Press. The family also has established a Middle Eastern Memorial Fund at the College of William and Mary in Williamsburg.

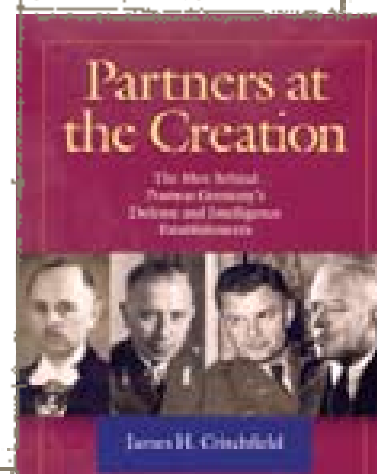
NDAC classmates may recall that Critchfield's first wife, Constance Taylor Critchfield, who had worked with him on the Bison Annual, was killed, along with his soon-to-be brother-in-law, David Baldwin, in a 1948 automobile-truck accident in Iowa. They were en route to meet Critchfield in Washington, D.C., following his return from Europe. Their two children, Michel and James, had remained in Fargo with their grandmother. A later marriage to Louise Mithoff Critchfield ended in divorce.

Critchfield married fellow CIA officer Lois Matthews during the mid-1970s. He is survived by her, two children from his first marriage, Michel Ann Webster of Clifton and James Critchfield Jr. of Culpeper, Va.; two children from his second marriage, Elizabeth Harding of Millwood, Va., and Thomas Critchfield of Falls Church; his sister, Peggy; and seven grandchildren.

Although he returned to North Dakota on only rare occasions after leaving in 1939, Critchfield never lost his strong sense of loyalty and affection for North Dakota. In 1997, on the occasion of his receiving the CIA's Trailblazer Award, marking the agency's 50th anniversary, he told a Forum reporter his Midwestern upbringing and NDAC education had prepared him well for his career.

"I have great respect for North Dakota," he said, "People who come from the Midwest are uniquely endowed with an attitude that serves our country well — I've seen it a thousand times."

— Jerry Richardson



Lessons learned

student essay
by becca kilzer





my parents dropped the last load of random college necessities in the drab, cool dorm room that was to become my new home. As mom wiped a tear from her cheek and gave me a final hug, I was silently cheering, “I’m free, I’m free at last!” Three years later and only months away from graduation, I look back on that day and think of how I have gained much more than freedom.

I remember eating lunch at the Union several weeks after my first class as a college student with two friends who were juniors. They told me I looked like a freshman. Three years later, the meaning of their comment is finally clear. Something about experiencing a couple years of college life gives students a more secure, self-confident look – or in the case of a former roommate, an “I’m-wearing-my-pajamas-to-class-and-don’t-care-what-you-think” look. In any case, it’s no longer about trying to fit in. It’s about being comfortable with who you are and not worrying if it’s not the same as everyone else. It’s about making friends who encourage you to grow as a person, and who accept you no matter who you are or who you become.

The changes I’ve undergone throughout college are subtle. I’m still the same optimistic, melodramatic idealist I always was, but there’s something different. I think it is in the questions I ask, the ideas I ponder. Now, instead of dreading the 300-mile drive home along North Dakota’s I-94, the straightest, flattest stretch of interstate I ever hope to encounter, I look

forward to the five hours of thinking-time the drive affords me. In these uninterrupted hours, I can sort out questions about my future, like where I want to be in 10 years, or what will make me truly happy.

I’ve become much better at asking questions since starting college. I used to think I had all the answers. No questions were necessary. It’s logical to assume that getting a degree means learning more and having more answers, but that is not necessarily the case. Sure, I’ve learned how to write one heck of a term paper in a few short hours (the night before it is due). I’ve learned the technicalities of hanging artwork at exactly eye level (a skill I mastered at my part-time job in the Memorial Union Gallery), but mostly, I’ve learned that I have so much more to learn.

In college, learning isn’t just about what you read in books. It’s more about the experiences you have. When tragedy struck my family, I learned of strength in relationships. When finals week stress became too much to handle, I learned the beauty of long walks at dusk. Six roommates in three years taught me the importance of individualism. All of these ideas have become a part of what I value, of who I am.

This isn’t to say learning comes easy as soon as you get to college. This was quite clear to me on my first day as a freshman when I realized my psychology class was four times bigger than the high school I had just graduated from. But college is about breaking out of comfort zones and finding new ways to cope with challenges. The

best part is, there will always be someone there – instructors, roommates or friends – to help along the way.

University instructors have an uncanny ability to see a student’s potential before it is discovered, to inspire confidence before it is fully formed. One year ago, as I paged through the NDSU magazine, I would never have imagined my thoughts would be published in it. I didn’t even know I could write, but someone believed in me. That’s all it takes, really – just one person. NDSU students are fortunate to have many people who believe in us and want to see us find our place in the world. My supervisor at the gallery once told me the best part about her job is watching students’ personalities bloom as they become more comfortable in the university environment and confident in themselves.

The greatest thing about life as a college student is the abundance of fellow students who are sharing the same experiences and having the same trials, all searching for their own identities. Someone is always willing to listen to you vent about crazy professors, or to share your addiction to ridiculous reality television shows. Without knowing, these people have encouraged me to keep searching for answers and keep believing in myself.

I know that I have not found all the answers yet – I don’t think that is possible – but I am not afraid to keep looking for them. I will leave NDSU a more confident, self-assured individual. I know what I value and what I don’t value. I know that I have something to offer the world.

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