JACK McDEVITT - Standard Candles

The observatory was warm in the mist. Light spilled out of the administrative windows on the second floor, and played against the moving trees at the edge of
the parking lot.

Carlisle was driving too fast, kicking up gravel, alternately flooring and releasing the pedal. He was impatient with the long uphill climb. The wipers sloshed back and forth, and the branches shut off the sky.

There would be a short staff tonight, because of the overcast. But he didn't care about viewing conditions: the Andromeda galaxy could have been blazing overhead, flooding the mountains with light, an d he would not have been more excited.

His printouts had worked their way out of his inside jacket pocket. He pushed them back down, affectionately. The numbers were gorgeous, and they flowed through him, and warmed him. My God, how he loved blue stars.

The road went up and up, and at last he bounced out of the forest and rolled into the parking lot. He jerked to a stop beside Boddiker's van and was out of the car, not caring about the cold drizzle, not stopping to lock up. He climbed
the three concrete stairs at the front of the building, caught his breath, and went inside.

Toni Linden was standing by the coffee machine. He waved the printout at her and
said "I've got it -- "and kept going.

Lowenthal was not in his office, so Carlisle went hunting for him and found him
down in the lower level control room arguing with Boddiker. Boddiker's thin features were in their negative mode, and the little red spot that always showed
up on his crinkled skull when he got excited was glowing. His voice was high and
he was jabbing his index finger at the Director. Carlisle didn't know what it was about, and didn't care. He did not back out of the room as a respectful young postdoc should have, didn't even wait for them to recognize him, but simply excused himself and shouldered into the conversation. "I think we've got
a new standard candle," he said.

Judy had also been part of that night. He'd known her only three weeks, but he had already fallen victim to every familiar romantic symptom: his voice betrayed
him in her presence, she completely dominated his thoughts, and the knowledge that she was seeing other men drove him wild. He had even come to accept the improbable notion that a higher power had designed events to bring them together. All he needed to do was find a way to hold onto her.

Even now, fifteen years later, she could jack up his pulse. He'd been right: Judy Bollinger had been worth any effort. Unfortunately, he had only recently come to understand what that really meant.

She had blue eyes that he could never quite see the bottom of. A trim jogger's body. And a smile that was once again troubling his nights. Carlisle,

returning to the observatory for the last time, considered the varieties of that resonant gaze.

In their early days, she had worn her auburn hair short. Judy was about average size, but because Carlisle was tall she had to reach for him, and she had a trick of standing on her toes, stretching toward him and holding her mouth up to be kissed, funneling everything she had into her lips.

On that night of nights, when he had so much to celebrate, he had hesitated to call her. It was, after all, late on a weekday evening, and he was still treating her carefully, anxious to do nothing that might damage the relationship. Don't be overeager. Patience counts, whether one is measuring the distances between stars. Or pursuing a beautiful woman.

But it was an opportunity to impress her.

He had used the phone in the conference center.

"Hugh?" She sounded pleased to hear his voice, and his spirits soared.

"I'm at Kitchener," he said. "Things are happening." His tone had undoubtedly been self-important.

But she chose not to notice. "What is it?"

"Judy, I've had a major breakthrough. I've found a standard candle."

"Are you sure?" She had sounded delighted, as if she knew what a standard candle was.

"I thought we might celebrate."

"I'm on my way. Wait for me."

And she was gone before he could explain he was thinking about Saturday.

He parked in the slot marked DIRECTOR, got his empty cartons out of the trunk, and paused before letting himself into the building. The mountaintop was still. He had stood out here that night, watching her lights come up the access road. (The road was dark now, cold and untraveled, save for the contractors who came in the daylight to remove everything that was of value.) Her white two-door Ford came out of the trees right there, and she'd parked over by the reserved spaces, under the security lights at the supply entrance.

The security lights were out now. For good. The Foundation had started closing down Kitchener's operations two years ago. Much of the action had gone to the southern hemisphere, where there was less light and pollution and a richer field for investigation. Carlisle supported the action, had even dissuaded Lowenthal from campaigning against the vote.

But it had cost him. Many of his old acquaintances, some whom he'd counted as friends, no longer talked to him. Furthermore, he would be going back to the classroom. His dreams of greatness were probably over.

He unlocked the door, let himself in, and turned the lights on. The well in which the eighty-inch Cassegrain reflector had rested was shadowy and cold.

"How far can you see with it?" she had asked. She was wearing a yellow sweater thrown over her shoulders. Odd that, after so long he would remember the details.

It was a naive question. "To the edge of the universe," he'd answered. That was not quite true, of course. They could see as far as the Red Limit, which was the farthest point from which light has had time to reach Earth since the creation.

He had supervised the removal of the telescope only the week before. It was on its way to Kitt Peak, where it would become a backup.

Judy had stood beside him, in this doorway, barely rising to his shoulder. But her physical presence had been overpowering.

She taught history at Franklin High School, which was now a shopping center. She knew damned little science, and less cosmology, but she seemed perpetually interested in what Carlisle was doing. Her father was a policeman, and she was a product of public schools and state universities, not blessed with life's advantages as he had been. She talked about wanting to write the definitive history of the McCarthy era. Everything hadn't come out yet, she'd said. His links with Hoover. Deals with Nixon. During all the years he knew her, she was gathering materials, and planning the book. Sometimes she read extracts to him. Carlisle, who had always found the social sciences boring, got caught up in the narrative. He was often appalled that government officials could have acted with such perfidy, and she told him more than once that she loved him because he had retained the ability to be outraged. "Don't ever lose it," she warned.

They were watching Boddiker, who was in the observer's cage. "He's our cluster specialist. What they're doing now is hoping the sky will clear. It won't. But if it does, they'll take pictures toward the galactic interior, so they can compare optical results with x-rays. Over there is the imaging center." Babble, babble. He winced now to think of it, but it all seemed to charm her, and she'd squeezed his hand when she thought no one was looking.

Lowenthal was gone a long time. Carlisle wasn't worried: he knew he was right; he had checked his results carefully. So he suggested they go celebrate.

"Isn't that bad luck? Before you get confirmation?"

"Maybe. But in the meantime, I get an evening with you. Worth whatever comes of it."

They took both cars and went down the mountain to Spike's. Spike's was a quiet bar back in the trees off Observatory Road, about a mile from the foot of the mountain. It was favored by the staff at Kitchener and the science department at
UEI because management catered to them, hosted their frequent celebrations and parties, and made it a point to treat them like VIP's.

That evening had been their first time there together. They'd found a corner table and ordered drinks and sat in the glow of a small candle in a glass dish.
Soft music flowed across the room. Carlisle had realized how little he knew about her, and how fascinated he was by even the trivia of her life. What had she been like in high school? What were her interests? What sort of home life did she come from? How did she really feel about him?

It was the happiest night of his life. He was with her, a cosmological golden age was approaching and he was looking forward to his career as a giant. By the
end of the century he expected to rank with Hubble and Sandage and Penrose. This
was a period utterly unique in the history of the world. A small group of men and women, for the first time properly armed with instrumentation and theory, were trying to make sense of the universe, how big it was, how old, whether the
expansion was as precisely balanced as it appeared, and why that should be so. How galaxies formed. Whether strings existed. Why there was symmetry. It was a glorious time, and Carlisle was already part of it.

And he intended to make that journey with this magnificent creature at his side.

She had looked at him with undisguised pleasure. Now, he understood how easily she was reading him.

I like being with you, her eyes said. But she asked, "What's a standard candle?"

The wax candle burned cheerily on the table top. "If you took twenty of these out of a box, each one would probably put out more or less the same amount of light. So if we saw one on a rooftop, we could figure out how far away it is by
measuring how dim the light has become. That's a standard candle. It's a light source that always radiates at the same level of intensity. We call it absolute
luminosity. Whenever you see it, you can get a decent range estimate." He stopped and sipped his drink. "Cepheid variables are standard candles. You can always figure out how far they are. But they aren't bright enough. We can only see them on local rooftops. What we need is something that's visible in the next
town. Or across the country."

"The blue stars," she said, almost breathless, as if she'd been running.

"Yes. The brightest blue stars in a galaxy always have essentially the same absolute magnitude. So we now have an intergalactic yardstick."

"I thought you could already measure distances with red shifts."

"A little bit," he said. "The redder the shift, the further the object. But

the
method's inexact." He looked at her across the rim of his glass. "They're subject to too many interpretations."

The candle glowed in her eyes. "Congratulations, Hugh."

Later, toward the end of the evening, he called the observatory. "Your numbers seem to work," Lowenthal told him.

Carlisle could still see the telephone, a big old-fashioned rotary wall model; could hear the soft tinkle of a piano solo; could smell warm wax on the still air. Judy sat angled in his direction, watching, her eyes locked on him, waiting
for a sign.

"Thanks," he said into the phone.

He looked at her. Thumbs up.

Carlisle had always been something of a Puritan. But that night a different set
of universal laws were in place. He bought a round of drinks for a group of strangers at the next table, puzzled them by toasting "candles everywhere," embraced Judy, and threw a twenty-dollar tip onto the table.

They drove to her apartment, Carlisle leading the way. (No sly suggestions about
leaving one car in the lot; he would never have been so obvious.) But it hadn't
mattered. At her doorway, she had slipped into his arms, and he became intensely
aware of the pressure of her left breast. The other was also engaged with him, but Carlisle had found that the sensation was more intimate, more intense, when
he concentrated on one at a time.

She had moved against him, subtly, and invited him in, so to speak. And it was over for Carlisle. He remembered her lips, the line of her jaw, her breathing the sound of the wind in the trees.

She did not draw away. Not then, nor for many years.

Next day, during the late afternoon, Lowenthal called and asked him to come out
to Kitchener. The Director's voice was somber, and Carlisle knew there was trouble. Nevertheless, he hadn't pressed; he was a drift in a euphoric state and
nothing could shake him. He put the call out of his mind and completed his classes for the day. Then, after a deliberately casual meal, he had driven back
up the mountain.

"You do seem to be correct," Lowenthal assured him. By then, he had been director at Kitchener more than ten years. He was lean and polished, self-effacing and eminently well-mannered, a rare breed among the pushy egos who
dominated the field. "The blue stars work. Unfortunately, we're late. Sandage and Tammann got there first. It's even been published. Damned thing's been on my
desk for three days. I saw it this morning."

Carlisle recalled staring out across the mountaintop. And he remembered what Lowenthal had said next, would always remember it: "Don't worry. It's bad luck.
But you'll be back. You're too good not to be back."

How can you sit there and tell me that the universe has no edge?"

He loved those early evenings, when her mysteries were still new to him, deeper
and darker than the spaces between the galaxies. And far more enticing.

They became Friday-night regulars at Spike's, and went to the movies and shows on Saturday. Carlisle floated through his days with a warm sense of well-being,
anxious only to get to the weekend.

She invited him to Franklin to address her U.S. history classes on how scientific progress since the turn of the century had influenced the course of events. Since Carlisle wasn't entirely clear on the course of events, he needed
help from her. But they pulled it off together, talking about atom bombs and computers and gas engines and the glee with which many of the churches had embraced the Big Bang.

They had met at the Kane Planetarium, where Carlisle had been a parttime lecturer. She'd been at their Star of Bethlehem program, had sat off to his fight with a man who'd looked like a football player. After the show, she'd asked a couple of questions, and then drifted away with her companion. He saw her several times after that. She was alone or with girl friends in subsequent visits, and they had always exchanged a few remarks on the presentation. It took
a while before he got up the nerve to invite her to dinner.

On the evening after the history class, he had taken another major step forward.
She'd been happy with his performance, and he saw a window of opportunity.
"Maybe Everett was right," he said, mysteriously.

She frowned between pieces of beef. "Who's Everett?"

"An astronomer. He suggested there might be a universe for every possibility. A
place where every wave function is realized. If an event is possible, somewhere
it happens."

That got her attention. "That's science fiction," she said. But he could see that the notion appealed to her.

"It's only an idea." He looked at her, and then blurted the thought that had crossed his mind, even though he knew it was not prudent. That it might scare her off. "If there's anything to it, somewhere out there, you and I are wearing
each other's rings."

It was an electric thrust. An uncharacteristically daring move.

She held him in suspense momentarily. And squeezed his hand.

Somewhere out there, you and I are wearing each other's rings.

She said yes a few months later, and they went to a little Unitarian church on a Massachusetts hilltop, where the only religious symbol was a stylized carbon atom. Judy's family, who were Catholic, were visibly displeased, and suspected the arrangement had something to do with Carlisle. But it was Judy's idea. Carlisle didn't care, had no strong religious views one way or another, and would have married her in a Fiji Island ceremony if she had asked.

His bride had been so taken by the notion of an infinite number of Judys and Hughs living subtly different lives beyond the stars, beyond our stars, she had said, that she wrote the idea into the ceremony: It may be that there are places where your eyes are gray, or where no one here would recognize my name. But wherever we live, if we have met, I love you. The wave function can break in no other direction.

They exchanged rings engraved with infinity, the mathematical symbol for infinity.

And if Allan Sandage and Gustav Tammann had beaten him to the blue stars, it didn't matter.

One of the great questions of the era was whether the universe was expanding in a uniform manner in all directions. Or whether the superclusters were so massive that they skewed expansion and created an imbalance. Preliminary results suggested that the Milky Way had been drawn off its natural course, and was falling into the Virgo Supercluster. Was that actually happening? If so, how fast was it moving? Could they devise a method to measure the Virgo effect? Carlisle took charge of the Kitchener team and they began assembling data.

He virtually moved into the observatory. Lowenthal encouraged him and made it clear that Carlisle could expect future high-profile assignments. "It's just a matter of time before you make your mark," he said. "I want to be sure you're in a position to take full advantage of the opportunities." And when Carlisle thanked him, the old man grinned. "Establish your reputation," he said. "When you've done that, you can thank me in public."

The issue proved inordinately difficult to settle. It remains unanswered.

He used the cartons to push the door open. There wasn't much left in his office.

He hadn't taken down his pictures. Carlisle standing beside Brent Tully at the Kona Conference, Carlisle shaking hands with John Schwarz at CalTech, Carlisle eating lunch with Allan Sandage in New York. An aerial photo of Kitchener beneath a full moon. A color enhancement of the Horsehead Nebula. A stylized rendering of an H-R diagram.

And of course his favorite picture of Judy, posed against an ominous sky at Cape Hatteras. He had taken it down at the time of the breakup, and then put it back a few months later.

He found old notebooks in the bottom of the lower right-hand desk drawer. They were spiral-bound, yellowed, tattered. Dated from before the arrival of his PC.
He slipped off the fat rubber bands, sat on the edge of the desk, and thumbed through them.

They made painful reading: his comments and observations were pedestrian. With the advantage of hindsight, he could see his limitations quite clearly. Hugh Carlisle's prime talent seemed to be recognizing the obvious.

He flipped through his rolodex. He had never purged the thing, and there were names of people who had long since retired or died. And names he couldn't remember. He dropped it into one of his boxes.

During the early years of their marriage, they'd gone to a lot of live theater.
In fact, they had seen George Washington Slept Here on their second date. Later,
Judy would insist that it was his reaction to that romantic comedy that had piqued her interest in him.

But their working hours never blended. After he became permanently attached to the observatory staff, he worked primarily at night. He'd get home as Judy was getting ready to leave for school. But they tried to make time for coffee.
"What's going on up on the mountain?" she would ask.

"We're counting globular clusters again, but what we'd really like to know --"

"Yes?"

"-- Is why the universe is so homogeneous."

"How do you mean?"

"Why is it so balanced? How does it happen that microwaves arrive from opposite
sides of the sky, from places that could never, in the entire history of the cosmos, have had any contact with each other, or any influence over each other,
and the microwaves are identical?"

She loved these vaguely mad notions. "I don't follow. What else could the universe look like? Are you suggesting all the stars should be in the southern sky? And nothing in the north?"

It was hard to explain. A lot of it was hard to explain. And it didn't help that, within his own limitations, he didn't quite grasp the finer points that Zeldovich and Steinhardt were making.

He was often too busy, or too tired, to try to lay it out for her. Occasionally,
he wondered whether he shouldn't have married a fellow professional. Like Harrigan. Or Cholka. An image of the energetic Russian rose before his eyes. Now
there was someone he could really have talked to.

Judy enjoyed the intimacy of evenings out, together among strangers as she liked
to put it. He tried to comply, even though the weight of his own

responsibilities increased after he became department chairman, and then assistant to the Director at Kitchener. Nevertheless, he did not complain, and in fact hid his feelings rather well.

He wasn't sure where things had begun to go wrong. Judy understood what drove him, knew he needed to put his name to a discovery, to find a Carlisle Effect, or formulate Carlisle's Theorem. She also understood that it was a compulsion not fostered exclusively by vanity, but by a genuine desire to make a contribution, to be at the focal point when they broke through into one of nature's secrets.

But she did not understand that he saw his time running out. It wasn't that he was getting chronologically old, but he knew that talent, genius, if it was present, manifests itself early. He had begun to fear that he was only a mediocrity, someone to hold the reins for Achilles. When he tried to explain, she assured him that everything would be okay. You're having a brilliant career.
And, Whatever happens, I love you.

In time, the emphasis changed. You're a Type A personality, Hugh. Type A's get ulcers. Die young. You need to take some time off.

Eventually, she began to spend time with her friends, and they trooped off occasionally for evenings on the town. She always invited him. "If you can make
it," she would say. Or, "If you think you might enjoy this --"

And there was Wade Popper, the superstring theorist. Popper made no effort to disguise his interest in Judy. They began meeting out on the jog path. And having lunches together. Only friends, her demeanor assured him. But Popper's intentions were transparent.

She had read his discomfort and discontinued the tete-a-tete. The incident left
a dead spot, a neutral zone between them, an area that he was never after able to penetrate.

"What does inflation mean?" The subject had come up at about the time of Lowenthal's retirement. The Kitchener team was working full time trying to determine how much dark matter would be required to make inflation theory work.
The answer: a lot. Maybe ninety percent of all the matter in the universe would
have to be dark. And Judy had asked about it during one of his rare evenings at
home.

"It means that the universe, in its early expansion, exceeded the speed of light
--"

"But that's impossible, right?"

"Not necessarily."

Her eyes flashed. "Sometimes I think you guys just make up the rules as you go along."

"Sometimes we do." It was a little exasperating, like teaching Cosmology 101. She knew just enough to get everything confused. "The trick is to construct an

explanation, sometimes any explanation, that fits the observations."

He looked out through his windows, down at the treetops, and tried to listen to
his own words. What had they sounded like to her?

He lifted the last of his books into a box, sealed it, and put it aside. He took
his CD player down off the shelf. The filing cabinet yielded folders filled with
papers he hadn't looked at in years.

Gradually, her questions had become less frequent. Conditions at the high school
were deteriorating, and she became absorbed in her own problems. But in '86 she
was voted Teacher of the Year, and they celebrated with a party at the
Radisson.

Carlisle enjoyed parties. The people at Kitchener and in the science department
threw them regularly. Threw them, in fact, with such energy that they were
barred from the local Holiday Inn.

A substantial crowd showed up for this one. Most of Carlisle's colleagues came.
And a small army of Judy's friends. More than he knew she had. There were even a
couple of reporters, and a delegation of her students. And although Carlisle was
pleased to see his wife get the attention, it hurt to realize that the press had
never come for him.

Judy glowed that night. She kept him on her arm, and introduced him to everyone
who came within their orbit. She glowed, like in the old days. My husband the
cosmologist. And he realized that night that his marriage had undergone some
fundamental chemical change.

The evening was still bright and clear in his memory. She had drifted through
the celebration, dancing with everyone, laughing, maybe drinking a little too
much. Some of the men, some of his friends and some of hers, looked at her with
such undisguised abandon that he was shocked. Carlisle was not ordinarily a
possessive man, and he felt no reason to doubt her, but the sight of all that
male interest elicited a twinge even now.

Across the years, her eyes cut him like distant stars.

His old electric razor (which he'd thought lost) was tucked away in the top of a
closet. He'd always made a point of looking bright and polished before starting
home in the morning. It still worked.

Lowenthal had been wrong. Carlisle never did come back, never again approached a
breakthrough. He was a methodical investigator, persistent and precise. He did
not make mistakes, but that is a clerical virtue. The hard reality was that he

lacked the vision of a Zwicky or a Wheeler. He was good on the follow-up effort, performing the detailed analysis to determine whether someone else's brilliance coincided with the way nature really worked. While the long hunt for the value of the Hubble Constant went on, and the debates over cosmic bubbles and macrostructure heated up, Carlisle was always a step behind.

In the spring of 1987, Judy's father died and she received a surprisingly large inheritance. They used some of the money to buy a time-share at Cape Hatteras. The house was big, with broad decks, and ocean views on both sides. It had a fireplace and a jacuzzi, and it was a damned good place to work. One does not need a telescope to do cosmology, he was fond of telling the postdocs. It is essentially an exercise of the imagination. And nowhere else did he feel so free, so unleashed, as in the big rug-covered living room, with the fire at his back, and the stars floating on the Atlantic.

Judy preferred to prowl the shops and beaches. One day, she returned with a surprise. "I wanted you to meet Griff," she said. He was average-looking, beginning to gray, a few years older than Carlisle. Dumpy. "He owns the Golden Coin." An antique shop, it turned out.

Carlisle shook the man's hand, and made the appropriate small talk. Good to meet you. Must be considerable business for antiques in a place like this. (Judy had bought a finely-worked tray, which she said dated from the 1920's.) He was congenial enough, but slow-witted.

"Griff says there's a concert tonight. By Prelude."

"Who the hell is Prelude?" He kept his tone light. Jaunty. He knew she didn't expect recognition from him. It was part of the game they played with each other.

"A string quartet," she said. "Hugh, why don't we go? It would be very nice. It's outdoors."

He would not usually be averse to a string quartet, but he hated to lose one of his few evenings on the Outer Banks. "Sure," he said bleakly. (It occurred to him now, dropping his paper weight and his desk lamp into the packing box, that he would like very much to recapture that night, recapture her, and have it all to do again.)

She had responded as he knew she would, allowed her eyes to close momentarily, had turned to Grill. "I'd better pass."

"Nonsense." Carlisle was aggressively generous. "No reason for you to stay home. Maybe Griff would like to go --"

Fool that I am.

Not that Judy would have been tempted to cheat. But he knew he had sent the wrong message.

He sealed the boxes and carried them one by one down the stairs and out to his car. The wind was picking up and, despite the clear skies, rain was in the air.
Lightning flickered to the west. He counted off the seconds until he heard the rumble. Seven miles.

Something about Hatteras had always stirred Carlisle's ambitions. And his discontent. "I need to get away from here," he told her, two years after Griff and his antique shop had passed into oblivion. He was pushed back into a leather
armchair, watching sheets of rain pour into the Atlantic. "No, not here, but from Kitchener. UEI. It's time to go, to move on."

She was standing near the windows, looking out. Judy loved terrible weather. She
came alive when the wind blew and the sky rolled, as if the electricity flowed into her. Arms folded, she had been weaving gently to the rhythms of the storm.
But he saw her shoulders tighten. "Why?" she asked. "Lowenthal will be retiring
soon. You'll be in line for his job."

"I don't want his job. Judy, I've been here too long already. I'm getting the wrong kind of reputation. If I'm ever going to break out, I have to do it now."

"You have a good reputation." She meant it. And he did. He could expect to get the directorship, and possibly even the astronomy chair at the University.

"That's not what I want."

"What do you want?" Her voice was soft, but he felt the undercurrent.

"Judy, I'm part of the cleanup crew. Somebody somewhere has a good idea. The superclusters are really pancakes, and they're stacked in layers. Hugh, check it
out. The voids between the galaxies are really vast bubbles, and the galaxies are out on the rims. Hugh, what about that? There are people like me in every major observatory in the world. Martin at Palomar. Babcock at McDonald. Leronda
at Mauna Kea. Dureyvich at Zelenchukskaya. Flunkies. People who get to bring the
coffee while things happen."

She looked at him, and the air thickened. "I'm sorry you feel that way."

How many times had he tried to explain it to her? "Judy, I might be able to connect with Schramm at Fermi. They're looking for somebody. I met him last year
and I think I made a good impression."

Her eyes clouded. "When would you want to go?"

"The job's open now."

"Hugh, I can't just pick up in the middle of November and walk out. I could leave at the end of the year."

The rain slid down the windows. After a while she rose and came over and sat

across from him, on the sofa. There had been a time when she would have tried sex, to ease the moment, put the decision off until they had both had time to think. Prevent anyone's position from hardening. But they knew each other too well now.

In the end, she encouraged him to try for what he wanted. He had, but the appointment went elsewhere.

The evening finally came when she asked him to sit down, when her gaze dropped to the carpet and her voice turned especially gentle.

He took it well. Don't make a scene. Don't embarrass yourself. He understood quite suddenly, quite painfully, that he did not want to lose her, and that to react badly was to throw away whatever chance he might have. He was wrong, of course. But the moment passed, fled, was long gone before he realized his mistake.

He dropped the last box into his trunk, banged it shut, and went back inside to
rum off the lights.

The universe was filled with light: whole squadrons of suns nearby, creamy galactic swirls floating beyond the Local Group, flickering pinpoints deep in the abyss. From the time Hubble discovered, in 1923, that there were other galaxies beyond the Milky Way, that there appeared to be no end to them, astronomers had argued over distances and measurements.

Something more than Carlisle's blue stars was needed. Something on a qualitatively different scale.

And while he and a host of others thought it over, Sandage and Tammann proposed
the Type I supernova. It was visible at enormous range, and it had a reasonably
consistent absolute luminosity. The downside was that you had to find one. But it was a method with promise.

Now that someone else had thought of it, it seemed obvious. Carlisle sighed.

He stared at the empty well that had housed the Cassegrain, and could almost feel her standing beside him.

Her departure was followed quickly by divorce papers. She assured him she would
harbor no bitterness, and she did indeed look unhappy. But she rejected his last
minute attempt to salvage the marriage. He was stunned. Carlisle had believed that, when the moment came, she would draw back.

He reacted by throwing himself into a new project. Teams from several research centers were making a coordinated effort to map a sixty-degree wedge of the universe, out to about three hundred million light years. That target area would
later be extended, but Carlisle set up and personally led the Kitchener group.

During that period, while he categorized galaxies, and recorded their positions,
he waited for her to come back. The long days passed, and he gradually adjusted
to his new existence. She was after all not the only woman in the world.

Meanwhile, the various teams involved in the mapping project were counting more
galaxies than theory allowed. By a factor of two or three. On a cold February night in 1990 he had poured himself some hot chocolate, and sat down with his assistants. They'd gone over all the models, and could not explain their results.

Why?

Construct an explanation, any explanation, that fits the observations. Easy to say.

He threw the switches, and the building went dark. There must have been a time when he should have seen what was happening, when he could still have acted before they were flung apart like bodies with reversed gravities. God help him,
but even now, with the benefit of all this hindsight, redial not know what he could have done differently.

He stepped out into the moonlight, closed the door behind him, and locked it. The metal felt hard and cold.

The wind blew across the mountaintop. Carlisle started down the steps when he noticed that a black car had pulled in behind his. He stared, trying to see who
was in it. A couple of kids, maybe. Planning to park.

The driver's door was open. The interior light blinked on, and Judy stood before
him.

She was radiant. Lovely. But visibly reluctant.

"Hello, Hugh."

She came around to the front of his car and stopped. Hope rose in Carlisle's breast. And resentment. And a flood of other emotions. "Judy," he said, "what are you doing here? How did you know I'd be here?"

She smiled. "Last day before they shut it down. Where else would Hugh Carlisle be?"

He stared at her. "I'd given up on you."

"As well you should." She glanced at the observatory. "It hurts to see it like this. That surprises you, doesn't it?"

"Yes," he said. "I thought you'd come to resent it."

"It was part of you. Part of us." She shrugged. "I'm sorry to see it go." "I'm glad you came."

"Thanks. So am I. But don't get she wrong idea. I just wanted to be here. At the
end."

His voice had grown thick. He thought about the infinity symbol on his ring. (He'd stopped wearing it about three years before she left, because he'd gained

weight and it no longer fit.)

"Spike's has closed down too. But I'd like to buy you a drink. Somewhere."

She pursed her lips. And smiled again. "I'd like that."

Somewhere every possibility occurs. He might indeed be one of a near-infinite number of Hugh Carlisles. And most of them were standing alone in this parking lot.

But Carlisle was in the right universe.

The stars were warm and bright and went on forever.