

Astounding SCIENCE FICTION

Reg. U. S. Pat. Off.

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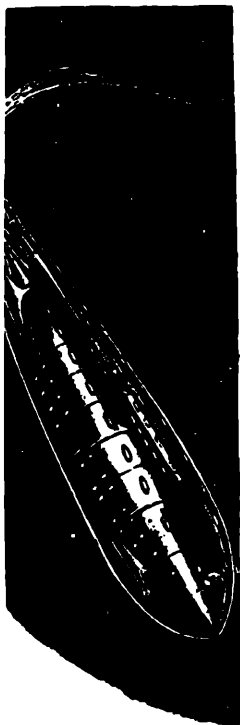
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Editor

JOHN W. CAMPBELL, JR.





LETTER TO ELLEN

The gentleman had a problem. Most men have trouble framing the question to The Girl; he had a harder job—and she would have a still harder decision to make—

Illustrated by Cartier

Dear Ellen,

By the time you get this you'll be wondering why I didn't call. It'll be the first time I've missed in—how long?—two months? A long two months it's been, and, for me, a very important two months.

I'm not going to call, and I'm not going to see you. Maybe I'm a coward writing this letter, but you can judge that when you've finished it. Judge that, and other things.

Let's see. I'd better begin at the beginning and tell the whole story right through. Do you remember my friend Roy Wisner? He came to work in the lab the same time I did, in the spring of '16, and he was still around when I first met you. Even if you never met him, you may have seen him; he was the tall blond guy with the stooped shoulders, working in the same branch with me.

Roy and I grew up together. He

was my best friend as a kid, back almost as far as I can remember, back at the State Orphanage outside of Stockton. We went to different high schools, but when I got to Iowa U. there was Roy. Just to make the coincidence complete, he'd decided to be a biochemist too, and we took mostly the same courses all the way through. Both worked with Dietz while we were getting our doctorates, and Dietz got us identical jobs with Hartwell at the Pierne Labs here in Denver.

I've told you about that first day at the lab. We'd both heard from Dietz that the Pierne Labs were devoted, now, almost entirely to life-synthesis, and we'd both hoped to get in on that part of the work. What we hadn't realized was quite how far the work had got. I can tell you, the little talk old Hartwell gave us when he took us around to show us the lay of the land, was just as inspiring as he meant it to be.

He showed us the wing where they're experimenting with the synthesis of new types of Celenterates. We'd heard of that, too, but seeing it was another thing. I remember particularly a rather ghastly green thing that floated in a small tank and occasionally sucked pieces of sea moss into what was half mouth, half sucker. Hartwell said, offhand, "Doesn't look much like the original, does it? That one was a mistake; something went wrong with the gene synthesis. But it turned out to be viable, so the fellows kept it around.

Wouldn't be surprised if it could outsurvive some of its natural cousins, if we were to give it a mate and turn it loose." He looked at the thing benignly. "I sort of like it."

Then we went down to Hartwell's branch, Branch 26, where we were to work. Hartwell slid back the narrow metal door and led the way into one of the labs. We started to follow him, but we hadn't gone more than three steps inside when we just stood still and gawked. I'd seen complicated apparatus before, but that place had anything at the Iowa labs beat by a factor one thousand. All the gear on one whole side of the lab—and it was a good-sized place—was black-coated against the light and other stray radiation in the room. I recognized most of the flasks and fractionating columns as air-tight jobs. A good deal of the hookup was hidden from us, being under Gardner hoods, air-tight, temperature-controlled, radiation-controlled, and everything-else-controlled. What heaters we could see were never burners, always infrared banks.

This was precision work. It had to be, because, as you know, Branch 26 synthesizes chordate genes.

Roy and I went over to take a closer look at some of the gear. We stopped about a meter away; meddling was distinctly not in order. The item we were looking at was what would be called, in a large-scale process, a reaction vat.

It was a small, opaque-coated flask, and it was being revolved slowly by a mechanical agitator, to swirl the liquids inside. As we stood there we could barely feel the gentle and precise flow of heat from the infrared heaters banked around it. We watched it, fascinated.

Hartwell snapped us out of it. "The work here," he said dryly, "is carried out with a good deal of care. You've had some experience with full microanalysis, Dietz tells me."

"A little," I nodded, with very appropriate modesty.

"Well, this is microsynthesis, and microsynthesis with a vengeance. Remember, our problem here is on an entirely different level even from ordinary protein synthesis." (It staggered her a little to hear him refer to protein synthesis as ordinary!) "There, you're essentially building up a periodic crystal, one in which the atoms are arranged in regularly recurrent patterns. This recursion, this periodicity, makes the structure of the molecule relatively simple; correspondingly, it simplifies the synthesis. In a gene, a virus, or any other of the complex proteinlike molecules, there isn't any such frequent recursion. Instead, the radicles in your molecule chain are a little different each time; the pattern almost repeats, but not quite. You've got what you call an aperiodic crystal.

"When we synthesize such a crystal, we've got to get all the little variations from the pattern just right, because it's those variations

which give the structure enough complexity to be living."

He had some chromosome charts under his arm, and now he pulled one out to show to us. I don't know if you've ever seen the things; one of them alone fills a little booklet, in very condensed notation. Roy and I thumbed through one, recognizing a good many of the shorthand symbols but not understanding the scheme of the thing at all. When we got through we were pretty thoroughly awed.

Hartwell smiled. "You'll catch on, don't worry. The first few months, while you're studying up, you'll be my lab assistants. You won't be on your own until you've got the process down pretty near pat." And were we glad to hear that!

Roy and I got an apartment on the outside of town; I didn't have my copter then, so we had to be pretty close. It was a good place, though only one wall and the roof could be made transparent. We missed the morning sun that way, but I liked it all right. Downstairs lived Graham, our landlord, an old bachelor who spent most of his time on home photography, both movie wires and old-fashioned chemical prints. He got some candid angle shots of us that were so weird Roy was thinking of breaking his cameras.

At the lab, we caught on fast enough. Roy was always a pretty bright boy, and I manage to keep up. After a reasonable period Hartwell began to ease himself out

of our routine, until before we knew it we were running the show ourselves. Naturally, being just out of school, we began as soon as we got the drift of things to suggest changes in the process. The day Hartwell finally approved one of our bright ideas, we knew we were standing on our own feet. That's when the fun really began.

Some people laugh when I say "that kind of drudgery" is fun, but you're a biochemist yourself and I'm pretty sure you feel the same way. The mere thought that we were putting inert colloids in at one end and getting something out at the other end that was in some strange way *living*—that was enough to take the boredom out of the job, if there'd been any.

Because we always felt that it was in our lab and the others like it that nonlife ended and life began. Sure, before us there was the immense job of protein synthesis and colloid preparation. Sure, after we were through there was the last step, the ultramicrosurgery of putting the nuclear wall together around the chromatin and imbedding the result in a cell. (I always half-envied your branch that job.) But in between there was our stage of the thing, which we thought to be the crucial one.

Certainly it was a tough enough stage. The long, careful reactions, with temperatures regulated down to a hundredth of a degree and reaction time to a tenth of a second; and then the final reactions, with everything inclosed in Gardner hoods, where you build up,

bit by bit, the living nucleoplasm around the almost-living chromosomes. Hartwell hadn't lied when he said the work was carried out with care! That was quite a plant for two young squirts like us to be playing around with.

Just to put an edge on it, of course, there was always the possibility that you'd do everything right and still misfire. Anywhere along the line, Heisenberg's Uncertainty Principle could shove a radicle out of place in those protein chains, no matter how careful you were. Then you'd get a weird thing: a gene mutating before it was even completed.

Or, Heisenberg's Principle might pull you through even if your process had gone wrong!

We got curious after a while, Roy especially. Hartwell had told us a lot; one thing he hadn't told us was exactly *what we were making*, fish, flesh, or fowl, and we weren't geneticists enough to know ourselves. It would have been better, while we were working, to have had a mental picture of the frog, or lizard, or chicken that was to be our end product; instead, our mental picture was a composite of the three, and a rather disconcerting composite it made. I preferred to imagine a rabbit, or better yet an Irish terrier puppy.

Hartwell not only hadn't offered to tell us, he didn't tell us when we asked him. "One of the lower chordates," he said; "the species name doesn't matter." That phrase "lower chordates" didn't ring quite

true. There were enough chromosomes in our whatever-they-were's that they had to be something fairly far up the scale.

Roy immediately decided he was going to get the answer if he had to go through twenty books on genetics to do it. Looking back, I'm surprised I didn't have the same ambition. Maybe I was too interested in chess; I was on one of my periodic chess binges at the time. Anyhow, Roy got the genetics books and Roy did the digging.

It didn't take him any time at all. I remember that night well. He had brought home a stack of books from the library and was studying them at the desk in the corner. I was in the armchair with my portable chessboard, analyzing a game I'd lost in the last tournament. As the hours went by, I noticed Roy getting more and more restless; I expected him to come up with the answer any time, but apparently he was rechecking to make sure. About the time I'd found how I should have played to beat Fedruk, Roy got up, a little unsteadily.

"Dirk," he began, then stopped.

"You got it?"

"Dirk, I wonder if you realize just how few chordate species there are which have forty-eight chromosomes."

"Well, humans have, and I guess we're not so unique."

He didn't say anything.

"Hey, do you mean what I think you mean?" I jumped to my feet.

If he did, it was terrific news for me; I think I'd had the idea in the back of my mind all the time and never dared check it for fear I'd be proved wrong. Roy wasn't so happy about it. He said, "Yes, that's exactly what I mean. The species name Hartwell wouldn't tell us was *Homo sapiens*. We're making—robots."

That took a little time to digest. When I'd got it assimilated, I came back, "What do you mean, robots? If we made a puppy that wagged its tail O.K., you'd be just as pleased as I would." (I was still stuck on that Irish terrier idea of mine.) That wouldn't give you the shudders. Why do you get so worried just because it's men we're making?"

"It's not right," he said.

"What?" Roy never having been religious or anything, that sounded strange.

"Well, I take that back, I guess, but—" His voice trailed away; then, more normally, "I don't know, Dirk. I just can't see it. Making humans—what would you call them if not robots?"

"I'd call them men, doggone it, if they turn out right. Of course if they don't turn out right—maybe I could see your point. If they don't turn out right. Killing a freak chicken and killing an experimental baby that didn't quite—succeed—would be two different things. Yeah."

"I hadn't thought of that."

"Then what the heck *were* you thinking of?"



"Aw, I don't know." He went back to the desk, slammed his books shut.

"What's bothering you, Roy?"

He didn't answer, just went into his bedroom and shut the door. He didn't come out again that night.

The next morning he was grim-faced, but you could see he was excited underneath. I knew he was planning something. Finally I wormed it out of him: he was going to take a look around Branch 39 to try and find some human embryos, as confirmation. Branch 39, as you know, is one of the ones that shuts up at night; they don't have to have technicians around twenty-four hours a day as 26 does. Roy's plan was to go up there just before closing time, hide, and get himself locked in overnight.

I asked him why the secrecy, why didn't he just ask to be shown around. "Hartwell doesn't want us to know," he said, "or he would have told us. I'll have to do it on the QT."

That made some sense, but—"Heck, Hartwell couldn't have expected to keep us permanently in the dark about what we were making, when all the dope you needed to figure it out was right there in the library. He must have wanted simply to let us do the figuring ourselves."

"Huh-uh. He knew we could puzzle it through if we wanted, but he wasn't going to help us. You think the lab wants to publicize what they're doing? No, Hartwell must be trying to keep as many people as possible from know-

ing; he hoped we'd stay uncurious. I'm not going to tell him we've guessed, and don't you."

I agreed reluctantly, but Roy's play-acting seemed to me like just that. Roy was deadly serious about it.

Later, I got the story of that night. He'd gone up to 39 as planned, and hid in the big hall on the second floor; that was the place with the most embryos, and he thought he'd have the best chance there. Everything went O.K.; the assistant turned out the lights and locked up, and Roy stayed curled in his cabinet under a lab table. When the sounds had died down in the corridors outside, he came out and looked around.

He didn't know quite how to start. There were all sizes and shapes of gestators around. When he had taken out his flash and got a good look at one, he remained in as much of a quandary as before. It didn't seem to be anything but a bottle-shaped black container, about twenty centimeters on a side, in the middle of a mass of tubing, gauges, and levers. He could guess the bottle contained the embryo; he could guess the tubing kept up the flow of "body fluids" to and from the bottle; he could recognize some of the gauge markings and some of the auxiliary apparatus; and that was all. Not only was the embryo not exposed to view, but he didn't see any way of exposing it. There was a label, in a code he couldn't read. Nothing was any help.

The gestators were simple enough compared to the stuff he worked with, but he had a healthy respect for that sort of thing and didn't want to experiment to try to figure them out. If you meddled with a gestator in the wrong way, there was the chance that you'd be ruining a hundred people's work; and there would be many more wrong ways than right.

He made the circuit of the lab, stooping over one gestator after another, considering. After a while the moon rose and gave him a little more light. That was not what he needed.

A key turned in the lock.

Roy, hoping he hadn't been seen, ran back to his hiding place. He left the cabinet open far enough so he could see. A figure came in the door, turned to close it, and strode toward the center of the hall. As it passed through a patch of moonlight from one of the windows, Roy recognized the face: Hartwell.

He must have been working late in his office and come down for a look at his branch's products before leaving. Be that as it may, his presence cinched the thing: whatever embryos he looked at would be from our branch. Roy watched breathlessly while the other went from bench to bench, peering at the code labels. Finally he stopped before one, worked a lever, and peeked in through a viewer in the side, which Roy hadn't noticed. He looked quite a while, then turned and left.

I don't need to tell you that Roy

didn't lose any time after Hartwell left in taking a look through that same viewer. And I don't need to tell you what he saw.

Reading back over this letter, I can see I'm stretching the story out, telling you things you already know, and things that aren't really necessary. I know why I'm doing it, too—I'm reluctant to get to the end. But what I've got to tell you, I've got to tell you; I'll make the rest as short as I can.

Roy was pretty broken up about the whole thing, and he didn't get over it. I think it was the experience in the gestation lab that did it. If he'd just asked Hartwell for the truth, straight out, the thing would have stopped being fantastic and again become merely his business; but that melodrama up in Branch 39 kept him from looking at things with a clear eye. He went around in a half-daze a good deal of the time, pondering, I suppose, some such philosophical problem as, When is a man not a man? It was all terrible, robots were going to take over the world, or something like that. And he insisted I still not tell Hartwell what he'd learned.

Then came the payoff. It was several weeks later, the day after Roy's twenty-sixth birthday. (The date was significant, as I learned later.) He told me before we left the lab that Hartwell had asked him to come up after work to talk with Koslicki.

I raised my eyebrows. "Koslicki, huh? The top man."

"Yes, Koslicki and Hartwell both."

He looked a little worried, so I ventured a crack. "Guess they've got a really rugged punishment for you, for trespassing that night. Death by drowning in ammonium sulphide, perhaps."

"I don't know why you can't take things seriously."

"Oh? What do you think they want to talk to you about?"

"No, I mean this whole business of—"

"Of making 'robots,' yeah. Roy, I do take it seriously, darn seriously. I think it's the biggest scientific project in the world right now. You take the kind of work we're doing, together with the production of new life forms like those experimental Coelenterates we saw, and you've got the groundwork for a new kind of eugenics that'll put our present systems in the shade. Now, we select from naturally-occurring haploid germ cells to produce our new forms. In the future we'll *make* the new forms.

"We can make new strains of wheat, new species of sheep and cattle—new races of men! We won't have to wait for evolution any more. We won't have to content ourselves with giving evolution an occasional shove, either, we'll be striking out on our own. There's no limit to the possibilities. New, man-made men, stronger than we are, with minds twice as fast and accurate as ours—I take that plenty seriously."

"But they wouldn't be men."

This was beginning to get irritating. "They wouldn't be *Homo sapiens*, no," I answered. "Let's face it, Roy. If I were to get married, say, and have a kid that was a sharp mutation, a really radical mutation, and if he were to turn out to be a superman—that kid wouldn't be *Homo sapiens*, either. He wouldn't have the same germ plasm his parents had. Would he be human or wouldn't he?"

"He'd be human."

"Well? Where's the difference?"

"He wouldn't have come out of somebody's reagent bottles, that's the difference. He'd be—natural."

I could take only so much of that. Leaving Roy to go to his conference with Koslicki and Hartwell, I came home.

There, I finished up the figuring on some notes I'd taken that day in the lab, then I turned the ceiling transparent and sat down with my visor. I'd just added a couple of new wires to my movie collection, so I ran them over—a couple of ballets, they were. No, none of the wires I've shown you. I've thrown out all the movies I saw *that* night.

I was sitting there having a good time with the "Pillar of Fire" when Roy came back. He made a little noise fumbling with the door. Then he slid it back and stood on the threshold without entering.

Switching off the visor, I glanced around. "What's the take, Jake?" I corned cheerfully. "Did Kos-

licki give you a good dressing-down? Or did he make you the new director?"

". . . I'll play you a game of chess, Dirk."

This time I took a good look at him. His shoulders were stooped more than usual, and he looked around the room as if he didn't recognize it. Not good. "For crying out loud! What's the story?"

"Let's play chess."

"O.K.," I said. He came in and got out the men and the big board, but his hand shook so I had to set up his men for him. Then, "Go ahead," I told him.

"Oh, yeah, I've got white."

Pawn to king four, knight to king bishop three, pawn to king five—one of our standard openings.

I pulled my knight back in the corner and brought out the other one; he pushed his pawns up in the center; I began getting ready to castle.

Then he put his queen on queen four. "You don't mean that," I said. "My knight takes you there."

"Oh, yeah, so he does," Roy said, pulling his queen back—to the wrong square. He was staring over my shoulder as if there was a ghost standing behind me. I looked; there wasn't. I replaced his queen.

Finally, still keeping up the stare, he began, "Dirk, you know Hartwell told me—"

"Yeah?" I said casually. I knew it had been something important. Roy hadn't been *this* bad the last

few weeks. Whatever it was, he might as well get it off his chest.

Roy, however, seemed to have forgotten he'd spoken. His eyes returned intently to the board. His bishop went to king three—where I could not take it—and the game went on.

"You're going to lose that bishop's pawn, old man," I remarked after a while.

I think that was what triggered it. He said, suddenly but evenly, "I'm one."

"I'm two," I said, apropos of nothing. My mind was still on the game.

"Dirk, *I'm one*," he insisted. He stood up, upsetting the board, and began to walk up and down. "Koslicki just told me. I'm one of the . . . Dirk, I wasn't born, I'm one of the robots, they put me together out of those chemicals in those white-labeled reagent bottles in that laboratory—"

"*What?*"

He stopped his pacing and began to laugh. "I'm just a Frankenstein, you can pull out your gun and sizzle me dead, it won't be murder, I'm just a robot." He was laughing all through this and he kept on laughing when he'd stopped.

I figured if he was going to blow up he might as well blow up good and proper. He'd make some noise, but old Graham would be the only one disturbed. "So," I said, "how did you feel going through the reaction vats over in 26? Did the microsurgery hurt when they put you together?" Roy

laughed. He laughed harder. Then he screamed.

Deciding that enough was enough, I yelled at him. He screamed again.

"Shut up, Roy!" I shouted, as sharply as I could. "You're as human as I am. You've lived with yourself twenty-six years, you ought to know whether you're human or not."

After the first couple of words he listened to me O.K., so I figured the hysterics were over. I tried to sound firm as I said, "Are you through with the foolishness, now?"

Roy didn't pass out, he simply lay down on the floor. I sat down beside him and began to talk in a low voice. "You're just as good as anybody else; you've already proved that. It doesn't matter where you started, just what you are here and now. So what if you did start out in a lab? The rest of us started out in the ooze on the bottom of some ocean. Which is better? It doesn't make any difference. You're just as good as anybody else." I said it over and over again, as calmly as I could. Don't know whether or not it was the right thing to do, but I had to do something.

Once he raised his head to say, "Roy Wisner, huh? Is that me? Heck no, why didn't they call me Roy W23H? . . . I wonder where they got the name Wisner anyway." He sank back and I took up my spiel again, doing my best to keep my voice level.

After several minutes of this he got up off the floor. "Thanks," he said in a fairly normal tone. "Thanks, Dirk. You're a real friend." He went toward the door, adding as he left, "You're human."

I just sat there. It wasn't till he'd been gone a couple of minutes that I put two and two together. Then I raced out of that room and to the stairs in nothing flat.

Too late. Graham's door was open downstairs, and the light from inside shone into the hall, across the twitching body of Roy Wisner.

Graham looked at me, terrified. "I thought it was all right," he stammered. "He asked me for some hydrocyanic, I knew he was a chemist, I thought it was all right."

Hydrocyanic acid kills fast. One look at the size of the container Roy had drained and I saw there wasn't much we could do. We did it, all right, but it wasn't enough. He died while we were

still forcing emetic down his throat.

That's about all, Ellen. You know now why I never spoke much to you about Roy Wisner. And you've probably guessed why I'm writing this.

Roy was one of the experiments that failed. He was no more unstable mentally than a great many normally born men; still, a failure, though nobody knew it until he was twenty-six years old. The human organism is a very complex thing, and hard to duplicate. When you try to duplicate it, you're, very likely to fail, sometimes in obvious ways and sometimes in ways that don't become apparent till long afterward.

I may turn out to be a failure, too.

You see, I'm twenty-six now, and Koslicki and Hartwell have told me. *I* wasn't born, either. I was made. I am, if you like, a robot.

I had to tell you that, didn't I, Ellen. Before I asked you to marry me.

Dirk

THE END.

