

Astounding SCIENCE FICTION

Reg. U. S. Pat. Off.

CONTENTS

JUNE, 1947 VOL. XXXIX, NO. 4

NOVELETTE

CENTAURUS II, *by A. E. van Vogt* 6

SHORT STORIES

LETTER TO ELLEN, *by Chan Davis* 42

THE MODEL SHOP, *by Raymond F. Jones* 54

ERRAND BOY, *by William Tenn* 80

ARTICLE

NEWS FROM OUR SUN, *by J. J. Coupland* 76

SERIAL

FURY, *by Lawrence O'Donnell* 103
(Second of Three Parts)

READERS' DEPARTMENTS

THE EDITOR'S PAGE 4

IN TIMES TO COME 75

THE ANALYTICAL LABORATORY 75

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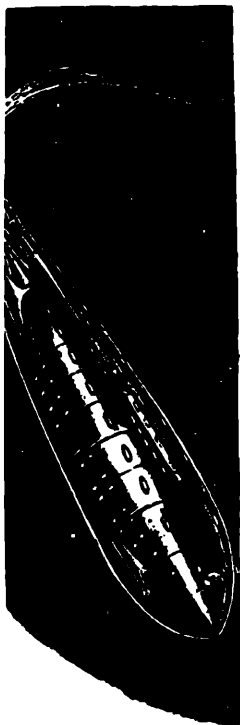
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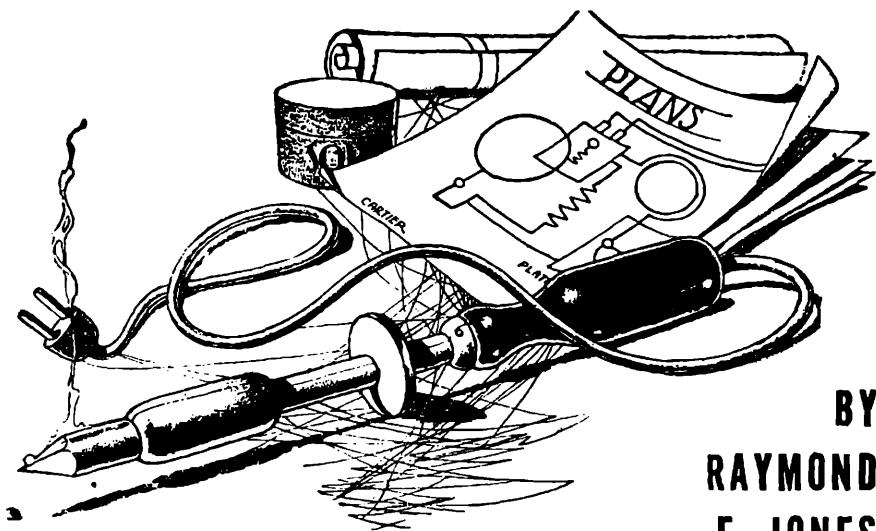
NEXT ISSUE ON SALE JUNE 17, 1947

AS-T-17



Editor
JOHN W. CAMPBELL, JR.





BY
RAYMOND
F. JONES

THE MODEL SHOP

Any research outfit has to have an efficient model shop. But the model shop this outfit had suddenly became just a wee bit more than that—

Illustrated by Cartier

Brian Kennely was at once the awe, the idol, and the unadulterated pain in the neck to the junior, assistant, and Project Engineers of Special Developments Lab at North State Electric.

The awe because his brain held more than the combined abilities of most any two of the other Project Engineers plus any three juniors. The idol because he'd take time from his own fantastic Goldbergs to help the lowliest ju-

nior with his first resistance coupled amplifier when it howled like a banshee.

And the pain in the neck because whenever a Brian Kennely set of prints went to the model shop all other projects sat on the shelf until the B. K. stuff was done.

This even included the work of Chris Devon, North State's ace engineer, whose specialty was slugging it out with intractable components and circuits that no

one else would tackle, until the impossible was accomplished with them.

In his pain-in-the-neck moments Brian Kennely was whisperingly referred to as the cavalier engineer. When he first came to North State, Millie, the lab secretary, had taken in his pipe and smart Stetson, and natty clothes.

"Just like Don Ameche," she'd said. "I'll bet he invents the telephone before next week, the big cavalier—"

But it was only because he had done and was doing the things that most men dream about but never accomplish. They liked him and respected him for it.

Chris Devon had known him since high school. At college they had met Martha, who had chosen Chris over Brian. Chris had never quite understood why, but he was not one to question miracles.

After college, Chris Devon had gone directly into development engineering, but that had been too tame for Brian Kennely who'd gone to Mongolia and South America for several years of geophysical engineering. He had designed instruments that were revolutionizing the science.

Then, shortly before the war, he switched to communication electronics. At Devon's suggestion he'd joined North State, but had spent most of his time as a field engineer. He had been as good as in the front lines during most of the war.

It was inevitable that their

opposite natures combined with life-long acquaintance should result in strong mutual attraction. As a consequence, they had determined to take the step dreamed of by most top-flight engineers but seldom achieved. They planned to open their own consulting office as soon as their kitty grew big enough—and it was growing. They'd soon be ready.

But there was still work to be done for North State. And Devon was two weeks behind on a fairly routine project, a remote weather station. His prints had been in the model shop for three weeks now.

And Kennely's—

He squinted up from his propagation calculations as he saw the familiar pipe laid on the top of the desk next to his.

"Hi, Chris," Kennely's voice boomed. He took off his coat. "Trying to put a forecasting unit in that weather station of yours?"

"How can I put anything in it—when it's still a bunch of paper down in MacIllhenney's files?"

"Aw, don't be hard on Mac. He's got his hands full these days, so many boomers passing through his shop pretending they're mechanics."

"Sure, I'd find excuses for him, too, if my stuff were all finished after only five days."

"You mean he's got my job done? Say, that's nice going! Come on down and let's have a look at it."

"I saw it as I passed the model shop on the way in."

Kennely took Devon's arm and hoisted him out of the chair. "Look, Chris, I'll tell you a secret. Here's how I get Mac on the line. Slip him a couple of these six-bit cigars—"

Devon laughed and gave up. You couldn't do anything else with a guy like Brian Kennely.

They walked down the hall to the model shop as Mac opened up.

"I hear you've got my baby all done," said Kennely.

"You only brought it in Monday," said Mac. "I told you Wednesday."

"Always kidding, eh?" said Kennely to Devon.

"What's that over in the middle of the floor?" asked Devon. "Isn't that—? Mac! You finished *my* model, too!"

The foreman stared across the shop at the two completed models. "Well, I'll be—! The boys must have put on a little extra speed yesterday. I had to leave early in the afternoon, but I didn't expect anything like that!"

They entered the shop and walked around the models.

"I never saw anything quite so pretty come out of this dump," said Kennely. "Who've you got on the wiring, Mac?"

"Same girls you always called solder slingers."

"Promote them to senior solder slingers. Come on, Chris, let's get Dick and Charlie to dolly these things into the lab."

The two engineers went back to their lab benches and began setting up test equipment.

Chris Devon's project was a simple station to be used by the Weather Bureau to collect climatological data in places where no co-operative observers could be obtained.

Brian Kennely's project, as always, was the more spectacular. It was a television remote indicating system for use over long distances or in cases of harmful effects to human observers at close range. It was particularly adaptable to radioactive chemistry.

When the two models were wheeled in, Kennely put the plugs for his transmitter and receiver units into the nearest receptacles and waited for the warm up. In a moment the dial needles began to swing over, and the engineer quickly adjusted the controls. The power supply seemed in order. The amplifiers were functioning properly. He switched in the sample instrument indicators, then the video pickup.

In a moment the receiver screen lighted in a blaze of color. He brought the meters into focus. They shone with the sharpness of a modern four-color print.

"What the devil?" Devon exclaimed. "I didn't know you were doing this in color. That's better stuff than the networks have yet."

"Oh, yes." Kennely's manner was his best cavalier style. "Remote chemistry, for example, would be almost impossible without color. This is not bad—for a first model."

The other engineers gathered around now, gaping at the excellence of the color television. Devon returned to his own prosaic setup. He'd have to get busy and push some of these weather stations out the door before he got cut off at the pockets. Webber, the chief engineer, wasn't happy with the lack of progress on the project, which was budgeted at one hundred thousand dollars with no wartime cost-plus, either.

Devon glanced over the beautifully arranged array of dials and indicators on the viewing panel. He checked the mounting of the scanner tube.

Something was wrong. Then he saw it—so obvious that he'd had to look three times in the same spot before it registered. There was an extra row of instruments on the viewing panel. He stared at them and swore to himself. Why couldn't they follow a blueprint down in the model shop?

What he saw was incomprehensible. On the unscheduled row of meters was the designation: Prognostication.

Groups of dials with variable time scales indicated pressure, temperature, and relative humidity, and precipitation rates.

Brian Kennely came up quietly. "Nice job on yours, too," he said. "Tried it out yet?"

"Some yokel down there is trying to be funny! Look—"

"So you *did* put in a forecast unit! I didn't know."

"Of course not! There isn't any such animal. Somebody's

painted a panel and put some dials on it. I can take a joke, but they've loused up the whole layout and Webber wants this stuff by the end of the week."

"*Mine* works," said Kennely, calmly drawing on his pipe.

"What do you mean?"

"*Mine* has unauthorized additions, too—but keep it under your hat. I don't want these other guys to know about it."

"What are you talking about?"

"The color business for one thing. You know as well as I do that no conventional color circuits could be put into a setup like mine."

Devon stared at his fellow engineer. "You didn't design it?"

"No—but it works. Somebody may be playing jokes, but that somebody can make our best stuff around here look like peanuts. Turn on your gadget. Let's see how it works."

As if doubting Kennely's sanity, Devon plugged in the cords and watched the tubes and meters come to life. He inspected them critically. His Climat Center receiver showed a perfect image of the dials, but it was not colored.

"I guess they figured you didn't need color," said Kennely. "How can we tell if the prognosticator panel is any good?"

"This is ridiculous, Brian! It couldn't possibly work. This thing would indicate exact temperatures, pressures, and so on. A meteorologist would be laughed out of the business if he claimed he could do that."

"But suppose we set the thing to indicate the data for tomorrow at this time and see how well it checks?"

"Great guns, this thing would be worth millions of bucks if it would do what those meters say!"

"Yeah," said Kennely thoughtfully. "But I'm thinking about the guy in the model shop who is responsible for this. He'd be a good guy to offer a full partnership when we open up on our own. Let's go down to the shop. Got those figures on tomorrow's weather?"

Walking towards the model shop again, Chris Devon had the curious feeling that he had stepped off a high precipice during the morning and hadn't quit dropping.

Mac came over as they entered. "Don't tell me," he said. "I know. It isn't any good. We'll have to get out another rush model by Saturday noon. We can't do it, and that's that!"

"We just wanted to compliment you on a fine job," said Kennely.

Mac scratched his head in disbelief. "What do you want, then?"

"Nothing. We want to compliment the ones who worked on our models. Who did it?"

"Parks would know. He's supervisor on them. Parks!"

The supervisor turned. When he saw Kennely he put a hand over his face.

"I'm sorry as heck, Brian, but we just haven't been able to get started on your model. We can't begin work until tomorrow at the earliest. All the parts are on hand, but—"

Mac turned upon him. "Are you crazy? Kennely and Devon both got their models this morning."

"That's impossible! We haven't made them!"

"Somebody did," said Kennely. "They're in our lab."

"I don't believe it," said Parks. "Somebody's—"

"Nuts," Mac said.

"Maybe he didn't see it," suggested Devon. "Maybe some of the crew just went ahead—"

"On a project like those two? It would be about as inconspicuous as four elephants doing a ballet in here."

"Well, how about you, Mac? You know which ones would handle it."

"Well, sure—Lessee, now. Myrtle would do the video circuits. No, wait a minute. She was on Peterson's project. Jane—"

The foreman suddenly looked hard at them. "Come to think of it I don't seem to be able to remember a single one that wasn't on something else. But *somebody* built those models—"

"Mind if we just wander around and talk to your people?" said Devon.

By noon they had spoken with every member of the shop crew. Every one denied any part of the work on the two models.

Even Kennely's calm began to waver. "Whoever the genius is around here, he's certainly of a retiring nature. Let's go back and dismantle mine. We ought to leave yours as is until we find out just

how well the prognosticator circuits are working."

"Suits me," said Devon. "But those circuits *can't* work!"

Carefully, they dismantled the model of the remote indicator. As they proceeded, they were filled with admiration for the ingenuity of the circuits disclosed. They were so completely unorthodox that it was as if a mind totally unfamiliar with conventional engineering had designed them. They were *foreign*.

By quitting time they had the color video circuits analyzed and they had encountered a completely new method of achieving color television, one they knew was worth untold amounts commercially.

"There it is," said Kennely as they finished. "Shall we continue our search for the unknown gremlin in our midst or shall we tell Webber we did it and see if the Board of Directors vote us a raise?"

"Why would anybody cook up a thing like this and not come forward to get the medals pinned to his chest?"

"Honestly, I don't know, Chris. This is the biggest, most senseless, and most potent puzzle I've ever seen. But let's call it quits for tonight. We'll see how the meteorological forecast for tomorrow makes out."

Devon took the sketches of the circuits home. After dinner that night he spread them out in his study while Kip and Pat, the twin nine-year-olds, hollered from downstairs for him to come and play.

It was like standing stupidly by

while someone pointed out the obvious, he thought. He would never in the world have conceived those circuit applications, but once he had seen them in use he knew that they were the simplest means of accomplishing their purposes.

There was one factor that neither he nor Kennely had considered sufficiently. Both the models had required several hundred man hours of work in their construction. Why couldn't they find one person who had contributed? Many must have had a part in it.

Where did Mac fit in? Devon wondered. Surely he must know more than he was admitting.

The next morning, Kennely was already at his desk when Devon entered.

He removed his pipe and looked up. "Shall we check the weather?"

"You check it," said Devon. "I think I'm getting scared of the answer."

"It's not quite time, but maybe it's close enough to interpolate the values. Let's have a look."

They went in and turned Devon's equipment on. The values were markedly different from the ones predicted the day before.

"We'd better wait," said Kennely. "Notice that the temperature readings appear to be of the air *outside* the building instead of inside."

"There's no sensitive element connected outside."

"Let's check on it with some thermometers."

At that moment, Jackson, a Project Engineer, walked by swearing profusely. "You'd think these

dumb solder slingers of Mac's had never seen a blueprint before!" He addressed the air that was sulphurous about his head.

"It's happened again!" said Kennely.

For half an hour they watched the instruments in the weather station. Slowly, the needles approached the values indicated twenty-four hours before on the prognostication panel.

At the exact time Kennely checked his watch.

"Bull's-eye," he announced. The three predicted values of pressure, temperature and relative humidity were right on the nose. It was too much for sheer coincidence.

"Well—any suggestions?" said Kennely, at last.

"Let's go down and look over the model shop again. Maybe we can pick up a clue. There's got to be *some* answer to this crazy thing."

They had barely stepped into the door of the model shop when Mac saw them. He picked up a bar of cold rolled steel from a bench.

"This place is off bounds for engineers!"

"What's the trouble, Mac?" asked Kennely.

"Trouble! That fool Jackson was in this morning. He swore up and down that we don't know a blueprint from the linoleum on the floor. He said we hadn't made his model according to the prints, same as you."

"Well, look, Mac—those models are a lot better than we designed them. We can't figure out who could build them that good. Why

do you think no one will admit working on them?"

"You've got me. As if I didn't have enough trouble trying to build Goldbergs, now I have to put up with screwballs who build stuff and say they never saw it before."

"Well—mind if we walk around some more?"

"You can't make much more trouble than I've already got, I guess."

The two engineers moved into the shop. On their left was Mac's pride, the powerful, new, six thousand dollar brake. A small turret lathe was located farther along, and beside it, a heavy drill press. Other, smaller machine tools were lined up along the wall farther to the left. On the right was the assembly division where rows of girls wired the jobs.

Straight ahead was a materials receiving room. A huge packing crate which formed a cube nearly ten feet on a side dwarfed everything else on the floor of the room.

"Wonder what that gadget is," said Kennely. "Another monster like this brake that gets used about once a week?"

"Mac ought to clean the place up," said Devon. "It looks like bug tracks all over."

"Where? What are you talking about?"

Devon picked up a soldering iron that was plugged in, but lying unused in its holder. "This." His finger pointed to a delicate, silver line that traced its way along the entire length of the cord.

OFF LIMITS
TO
ENGINEERS



"I never saw any bug tracks like that before," said Kennely. "Look, here's more of the stuff." Kennely pointed to an almost invisible line of it on a small electric wrench.

Devon traced it along the cord into the conduit. They moved back to the section occupied by the machine tools. On each, they found thin silver lines running to the various elements. When they looked closely, the entire floor seemed crosscrossed with the threads. They went out to the materials storeroom and found the stuff swarming over the floor and up on the sides of the huge packing case that housed the unknown machine monster.

Mac came up as they looked over the maze of threads.

"Find anything?"

Devon shook his head. "You ought to spray the place with DDT. It looks like bugs are swarming all over you, leaving these trails."

Mac took a chisel and scraped at some of the stuff. "That's only a minor difficulty. We've been swearing at it for a week now. It won't come off anything, and no one can find out where it comes from. Why don't you make a project out of it? It would be about as useful as some of the dingbats you design."

"What's in the big box?" said Devon.

"Heaven only knows. I haven't had time to look. It came in with an order of materials several days ago. An engineer's gadget for his project, I guess, but nobody's claimed it yet. If they don't pretty

soon, I'm going to ship it back where it came from."

The engineers left without coming to any conclusion. As three o'clock approached, they watched the sky expectantly. At twenty minutes before three it began to sprinkle and exactly on the hour the maximum precipitation was falling.

Kennely pulled his chair over by Devon's desk. "How many millions do you think it will be worth to good old North State?"

"Have you talked to Jackson about his gadget?"

"No. He saw that it wasn't as he'd had it drawn so he just sent it back for changes. So I don't know what it did—*special*, I mean."

"I'm getting worried about this business. It can't be supernatural."

"Let's come back tonight and take a private tour through the model shop."

"You think somebody might be working here at night? Why?"

"We haven't found anything in the daytime. It's a thought."

Devon was ready to try anything. He called Martha and told her he'd be working late. At five o'clock he and Kennely went out for a snack. When they returned, the assembly lines were dark and the labs were empty with the exception of two or three engineers working on their own time—apple polishers, Kennely called them.

The model shop was dark and deserted. The watchman opened it, and, as the door swung open,

they saw dimly in the darkness the giant brake slowly closing on a sheet of chassis metal. The clank of its reciprocating gears echoed ghostly in the darkened shop.

The watchman flashed a beam of light. "Who's in there?"

He switched on the lights. The brake was motionless.

"I'd have sworn that thing was working," said the watchman.

Kennely shrugged. "Nobody's here. It couldn't have been working."

The watchman left hesitantly with a final backward glance at the inert, giant brake.

"Brian, that thing *was* going!" Devon said when they were alone.

"I know. But I wouldn't want that watchman spreading word that the model shop is haunted."

"Haunted! Good grief!"

They moved slowly about the shop. On all the machine tools were partly worked pieces of stock, as if the equipment had suddenly ceased operation in the midst of heated activity. The engineers knew that Mac didn't allow his men to leave their machines in that condition. Kennely placed his hand on the motors and on the cutting tools. They were hot.

The suggestion of an intangible presence that had suddenly turned off all the machines the moment the door opened was oppressive. Certainly, the engineers knew that such a thing was ridiculous and impossible, yet the impression was there, nevertheless.

"Maybe this is like the old fairy tale," said Devon. "The one about

the little shoemaker who went to bed and found the good little gnome had done his work when he woke up."

Kennely strolled towards the opposite side of the room, glancing down at the silver threads criss crossing the floor. He stopped and pointed.

"Look, Chris. Maybe these bugs came in with some shipments. Look how these threads all seem to converge on this big box."

"Yeah, that's right. I'd never noticed it before. Wonder what's in the darned thing? Let's have a look."

He took up a hammer from a bench and began ripping at one of the boards, pounding and prying.

Abruptly, a heavy voice said, "Thanks, fellow. — That was just enough to unbalance the blanking matrix. Now we know where the thing is,—we can work on salvage."

The engineers felt the short hairs prickle on the backs of their necks.

"Kennely—was that you talking?"

"No—look! Those two guys—who are they?"

Beside the large box, two strangers were staring at the engineers. The two were not more than five feet tall. Their dress was not wholly alien, but the cut of the overall type garments was distinctly unfamiliar.

"Who are you?" Kennely demanded.

"I am Tarman, Chief Transport Agent, American Carriers, and this is our technician, Croul. We lost our valuable cargo and were about ready to pay the three quarters million that it would have cost us.

We are certainly grateful to you for unjamming the matrix and helping us locate it. We are not able, however, to spot it exactly with our equipment until you turn off your local radiation. If you would be so kind as to do that, we will move the shipment from your premises."

Kennely and Devon continued to stare while the strangers spoke. It must have been a considerable number of seconds after he was finished that Kennely finally opened his mouth.

"We don't understand all that," he said. "We never heard of American Carriers, much less a system of transport that could lose a cargo such as this inside a building. We thought this box belonged here. Explain yourself."

Tarman paled slightly and turned to Croul, who nodded. "I told you we were in the antique era. We shot clear beyond the delivery date. We'll lose our charter if this gets out. It's happened too often."

Tarman nodded and faced the engineers again. "This must seem all quite strange to you. We operate a transportation system through time, a temporal exchange agency. You know nothing of this, of course, because we have not touched your era before. It is not judged prudent that we do so by the Charter Council.

"The appearance of our cargo here was caused by some malfunction of our equipment, and our present inability to salvage it is caused by the radiation with which

you have surrounded it. I trust that you will release it so that we may remove the cargo."

Devon whispered to Kennely, "Are we dreaming, or just crazy? This doesn't happen to a couple of solder slingers like us."

"We're neither—and it is happening to us," Kennely said with a fierce exultation that Devon did not comprehend.

"What kind of a cargo is this?" Kennely asked Tarman.

"I don't know, except that it's a piece of machinery known as an engine co-ordinator. It is used in large industrial plants to guide the processes of a large number of machines. In some manner the plans are scanned within the machine and the shop tools are guided in producing the equipment in the approved technical manner, which has been worked out and set into the engine co-ordinator. Much repetitive engineering is saved because mere rough sketches can sometimes be used to produce finished machines of great complexity. The technical details are already stored in the co-ordinator. Levitation and tractor fields are, of course, generated to handle materials.

"Will you please release our cargo, now?"

"I'm not so sure we want to release it," said Kennely slowly.

Tarman's face went white. "You mean you would attempt to steal it?"

"That's a rough word," said Kennely. "Say, rather, that we'd analyze this machine so that we could duplicate it. Allowing us access

to these principles should be fair reward for our return of it."

"That's blackmail! This cargo was due a week ago. We're already paying heavy penalty to the Black Machine Company for nondelivery."

"I'm afraid you're being rather ungenerous. If we hadn't disturbed the box you never would have found it—so you say."

Croul shook his head and looked at his superior. "I understand now why the antique eras are forbidden. Such barbarous relationships—"

"Croul, can't we possibly work through their radiations?"

The technician shook his head. "It's almost impossible to get it into focus. We might remove chunks of the local impedimenta without coming anywhere near the cargo."

"I'm sure we needn't be too concerned about that in view of the attitude the natives have taken. Try it."

"I wonder what radiation they are talking about?" said Devon.

"Maybe the microwave set that Calvert has got on life test upstairs. It's so full of bugs that radiation has been leaking all over for the last two weeks. Everybody's kicking about it. If that's what's keeping this gadget here, we'd better get a proper antenna and spray the place with radiation."

"You're thinking the same thing I am!" said Devon. "If we could copy this machine loaded with the techniques of maybe a thousand years from now—what a position we'd be in to open our own business! Hook it up to a shopful of tools and feed in rough blueprints and watch

it turn out miracles—like a weather forecaster and a new type color television. We can't let this get away from us!"

"The levitation and tractor fields," said Kennely thoughtfully. "That would explain why it quit working as soon as we came near. Automatic safeguards for the operator."

They noticed now for the first time that they were looking at some kind of a projection of the strangers out of time, rather than at the men themselves. The projection seemed to include the image of some kind of technical plant which the engineers supposed was the equipment involved in transport through time and space.

The figures began to move around before the complex panels.

Kennely said, "Come on. Let's get this Alladin's Lamp opened up."

As they began ripping the crate apart, Tarman gave one last despairing cry. "Stop it, you fiends!"

The engineers continued. They observed that the multitude of silver threads all disappeared through cracks in the crate and disappeared within the black mass of the machine within.

"I'll bet that's a new method of wiring," said Kennely. "It looks as if our friends of the future simply place a machine near other machines and it hooks itself up like a spider spinning a web. Since this is a controlling device for shop machines such as ours, it automatically wired itself up and went to work. Perhaps some jolting due to

the mishap of landing here switched on the initial circuits.

"Machines that spin their own hookup wiring! But you must be right," said Devon incredulously.

Suddenly, there was a whine in the air, like the scream of a shell overhead. The engineers instinctively ducked, then the very earth upon which the plant was built seemed to rock.

The engineers turned slowly, fearful of seeing the walls crumple about them.

Devon pointed towards Mac's pride, the giant brake. "Look!"

Kennely stood agape. Half the brake was gone, sheared cleanly away, and there was a ten-foot hole in the earth beneath the floor.

"They play rough and potent," he said. "Mac is going to feel bad."

"Mac! What about us. Look what would happen if they caught us half in and half out of that electronic cheese knife!"

"I think we'll be safe if we stick close to the gadget. That seems to be the point they can't hit because of Calvert's microwaves."

"But what if they should hit it? Where would we be? Brian! Where *would* we be? If this machine is only a single example of the science of the future, think where we'd be if we could go there and study. Let's make a deal with them. If they'll take us there, we'll let the machine go back."

Kennely shook his head decisively. "No. Absolutely not. It's too dangerous. We know nothing of the time transport machine. Maybe it can't carry live cargo.

And I don't trust that guy, Tarman. He'd be just as likely as not to accept the offer, knowing that we'd come through crisped to cinders. I wouldn't want my neck in his noose for anything. We'll figure out some way to get this machine. That will be big enough jackpot for us."

"And you're the guy that's been shot at by Chinese bandits, South American Indians armed with poison arrow blowpipes, and by Jap fighter planes!"

"Exactly. That's why I say this is too dangerous."

They returned to the attack on the packing case.

"Give me a hand here," said Kennely. "These nails they use are something, too. They expand like fish hooks. Must be a trick of closing them to get them out—"

A second shrilling in the air turned them about. Slowly, as if dissolving in some mysterious acid vapor, a drill press and a section of the turret lathe vanished before their eyes.

"He's coming closer," said Devon.

Kennely tore the last of the packing case away. The machine stood exposed. It seemed featureless until he discovered the almost invisible snaps on the drop panels which revealed the faces of instrument panels complex beyond understanding. The engineers could see no external power connections unless some of the silver threads were tapping the power line. It seemed impossible that such thin carriers could supply the current

to operate a complex creation like this.

"It looks like they include a free copy of Webster's Unabridged Dictionary to all cash customers," said Devon. He nodded towards a receptacle where a thick volume reposed. He began to pull it out and glanced at the cover.

"Hey! This can't be . . . it is! Brian, here's an instruction book on how to run the gadget!"

He opened the thick tome to the middle while Kennely looked over his shoulder. He started to read aloud from a random paragraph:

" . . . then the six paratempal tubes are connected in cycloid and the field stress advanced to six point three diams. The co-ordinator is shipped from the factory with this adjustment made for standard gravity, but with mass-inertia variations caused by changes in gravity it may be necessary to go through the entire process of setting the horostasis circuit in operation in proper sequence . . ."

"Cripes, Brian. We can't read this stuff. I'd like to bet that nowhere in these pages does it tell what a paratempal tube is and how it functions. Take any one of our own instruction books. There're a thousand references unexplained to anyone not equipped with the proper background. And we're definitely not equipped with the proper background to savvy this!"

Kennely nodded. "It'd take us months to plow through this and attempt to figure out the references. With Tarman biting chunks out of

the plant we can't fool around about it."

They looked back towards the image of the time-distant control room of American Carriers. Tarman and Croul were busy over a computing desk, but they looked up as the men approached the projection.

"Are you ready to give up our cargo?" said Tarman. "We don't want this junk we're picking up from you, but I don't imagine it improves your surroundings to be cut up this way."

"We'll make a deal," said Kennely. "Let us have access to the co-ordinator long enough to copy it and we'll let you have it back."

"We must have it at once. Our charter would be cancelled if this became known."

"Give us twenty-four hours then, and we'll promise to release it."

"Intact?" Tarman's face set suspiciously.

"Intact."

"What will you do during those hours?"

"Try to make what analysis that we can."

"All right," the transportation chief sighed wearily. "I guess another day at this rate of indemnity won't completely ruin us."

"One other thing," said Kennely. "You must promise not to make yourselves apparent until we are alone here again."

"All right. Anything—as long as you promise to return our cargo within that time limit. Good-by."

For a moment the two strangers out of another age glared balefully



at the engineers. Then, abruptly, they vanished.

Devon passed his hand over his moist brow and looked around at the shambles in the model shop.

"I suppose it all happened. There'll be proof enough when we hear from Mac and Webber about this—"

"Yeah, it creates something of a problem, all right." Kennely walked over and stared into the depths of the hole where water was slowly accumulating.

"We'll come in in the morning and be surprised as anybody over the wreckage here. Then I'll tell Mac the gadget is equipment I've

been looking for on my indicator project. I'll explain it got missent to the model shop and I didn't bother to investigate until I needed it. That ought to hold water."

"What did you mean when you told Tarman you'd return the machine in twenty-four hours? You know we can't do anything in that time."

"We can't—unless we think of some kind of a deal to make with him. They must want *something* we've got. Anyway, it gives us that much delay and keeps them from biting the whole plant in little pieces."

"O.K. Let's call it a day and

clear out of here. We can't do anything tonight. We'll sleep on it and talk it over in the morning.

Devon's sleep during the remaining few hours of the night was anything but restful. His nightmares were filled with enormous termites that were chewing up the house a cubic yard at a time, and he ended up in a cold sweat at five thirty, looking and feeling as if he'd been on an all-night binge.

He dreaded the idea of going to the plant. Kennely could carry off a thing like this without a flick of an eyelid, but Devon could hardly get away with it. He couldn't josh Mac for getting plastered and tearing the shop apart and become just the right shade haughty at the slightest suggestion that he knew something about the business because he was there last night.

He found what he expected as he walked down the hall towards the model shop on the way to the lab. The entrance was completely blocked by a mob of other engineers and assembly-line workers trying to get a glimpse of the mysterious holes in the floor, and the machinery that had been sliced.

As Devon struggled to ease past the mob, he saw Kennely in the center of things up front, being properly amazed and speculating aloud as to the possible causes. He spotted Devon.

"Chris! Come and see what Mac's been doing!"

The mob parted its ranks to let Devon through. He pushed his way in and stood face to face with

the disaster. Webber was there, bleak with mystification and anger looking for a place to strike.

"The watchman says you and Kennely left around midnight. Kennely says you didn't hear a thing or see any signs of this, then."

"No. Not a thing," said Devon. Somehow the daylight and the mob lent an aspect of magnitude to the disaster that dwarfed his feelings of the night before.

"As I told you," Kennely broke in, "we just unpacked the case to see if it was my missing equipment—"

Webber glowered down into the hole another thirty seconds, then turned to Mac. "Get maintenance to clean this mess up as soon as possible. Reorder the machine tools you need. I'll push the papers through. We can't get much farther behind on the model work. We'll be making last year's equipment next year at this rate!"

Back in their own lab, Kennely and Devon sat down at their desks. "Figure out anything?" asked Kennely.

"Nothing but nightmares all night."

"Me, too. An engineer is no good in a situation like this. An average smart business man would be able to think up a deal that would bring Tarman across pronto. But here we are, can't think of a thing."

"Well, let's get to work. Let's analyze that prognosticator panel and maybe we'll think of something as we go along."

They spent the remainder of the day delving into the complex cir-

cuits of the weather forecaster. The components were there; their circuit connections became apparent as the engineers proceeded, but the actual principle of operation was still elusive.

When the entire circuit was finally traced and sketched in their log books, they still had no conception of the means by which these elements could forecast weather factors. They could trace the paths by which voltage was applied to the aneroid barometer action to register the future instead of the present air pressure. They could observe the control tube action which governed that voltage, and traced it back in a complete circle to the aneroid itself, which seemed to provide the controlling impulses.

It was a maddening circle in which something appeared that did not seem at all related to that which was fed in.

As the afternoon waned and the other engineers prepared to go home, Kennely and Devon began building up the circuit again for dynamic tests to try to find the missing factors.

"I've been thinking," said Kennely. "I believe I've got a little deal that Tarman will fall for. Let's knock off now. I'll tell you about it tonight. Let me call for you at your place about midnight. By that time we can be sure that all the apple polishers around here will have gone home."

"Tell me what you've planned."

"I'd rather show you. There'll be plenty of time, and I've got to do a little more thinking on it."

Devon saw no reason for Kennely's reticence, but he didn't feel like arguing the matter.

"O.K." he said. "I'll wait for you. I hope you've got something good because Tarman will start chewing up the rest of the plant if we don't let the co-ordinator go back."

"I don't think we're going to have to worry about that, and I think we're going to have our consulting office, too. See you tonight."

Devon drove slowly on the way home. Throughout the day his mind had been furiously active on his own plans—the same plan he had proposed to Kennely the night before.

The appearance of Tarman and Croul, and the revelation of the great science of the world of the future seemed an opportunity that would be criminal to reject. He could not understand Kennely's refusal to attempt to go there because of the supposed danger.

These men of the future seemed civilized. An idea of their morality was indicated by their reaction to the engineers' withholding the co-ordinator. They obviously viewed that as the mark of an inferior culture.

There could hardly be extreme danger in attempting to force a visit to their world. Their reluctance to establish contact could surely be overcome.

But there was another factor, one of the main factors, he admitted to himself. His life had been chained to a slide rule and a desk while Kennely had spent his in adventuring

around the world. This was the opportunity for adventure that no deskhound, handbook engineer could afford to pass up no matter what the cost.

The cost—

Martha, Kip and Pat. They represented all the real values of his life. There might be a chance of his not coming back—

He had to take that chance, he told himself desperately. Any man in his place would have to take it. Perhaps to Kennely, who had adventured all his life, it didn't seem like much. Perhaps the mere acquisition of the co-ordinator was enough for him, but to Devon the personal exploration of that future world was even more important than the machine. Besides, what other marvels might be obtained?

His mind was definitely made up. He'd go down to the plant around ten and try to make contact with Tarman and Croul. He'd offer to release the co-ordinator instantly if they'd take him along. They couldn't refuse a request like that.

When Devon arrived home, Martha had a steaming dinner ready. He thought she had never looked quite so pretty as she did that night in the blue gingham and with her face flushed gently with the effort of getting dinner.

"Kip and Pat are ready, darling," she said. "You're late—as usual. Something important doing tonight?"

He kissed her. "Rather. I've got to go back later. About ten."

"Why so late?"

"Some special stuff that depends

on time. I don't know how long I'll be."

He didn't know how long he'd be—

He looked at Martha and the children. He couldn't kid himself out of the knowledge that he was planning to gamble them and everything else he had on this fantastic sweep into the future.

But he had to go. Just *had* to—

This would give him and Kennely the one break they needed, he thought. With knowledge of the co-ordinator and other machines like it, they could command the trade of the whole electronic world. They'd be free to develop the research labs they'd always dreamed of.

More than that, it would satisfy the hungry yearning something that Devon had felt when he'd seen Kennely go off to the South Seas during the war to do field engineering in war-contested skies.

It was a sort of desperate need to prove himself. He had to do at least one *big* thing in his lifetime.

He felt guilty as he sat down to listen to the radio for a while. Martha sat on the arm of the chair and talked. He ought to tell her, he thought, but she'd tell him how dangerous it was and how much she and the children needed him, and he wouldn't go.

Ten o'clock approached, and he began looking at the clock apprehensively. Martha said, "I'll fix a sandwich and coffee to take with you."

At just five minutes to ten when he was getting his hat on, the phone rang.

"Hello, Chris," said Kennely. "I haven't got much time to tell you this. Maybe only a couple of minutes. I made a deal with Tarman and Croul. I thought I wouldn't call you, but I wanted to say good-by. I left a note in your desk here—"

"Brian! What are you going to do?"

"The only thing possible, Chris. You know what it is. I saw it in your eyes. That's why I couldn't say anything. Read my note. Got to go now. Tarman's—"

The phone went suddenly dead. Devon dropped it and raced for the front door. "That was Brian, Martha. He's at the plant now. Got to run. Don't wait up for me."

He ran down the front walk and jumped into the car. He swung savagely away from the curb and into the stream of traffic.

As he drove, the surging hatred within him boiled like steaming, corrosive acid, eating at the structure of the lifelong friendship between him and Kennely.

Kennely had known that Devon planned and wanted to go into the future. That's why he had condemned Devon's plan the previous night. He'd gone on alone, because he couldn't share the adventure and the glory. Devon should have known, instead of being blinded by Kennely's bland insistence upon the danger of the project.

The night lights illuminated the front of the plant in glaring brilliance as he drove through the wide gates. It took him five precious minutes to get the watchman. The

latter was disturbed by Devon's agitation.

"Open the model shop," Devon demanded. "I must get in there at once!"

The watchman was a new one and slowly checked Devon's company identification, then turned and led the way with maddening, ponderous omnipotence over engineers who wanted access to the building in the hours when only watchmen reigned.

Sweat was bursting like ripe pods on Devon's face as he surged ahead when the model shop was in sight. It was dark. He pressed his face against the glass and shielded his eyes with his hands. There was no sound or light or sign of human presence.

Devon turned with a start as the sluglike watchman rattled the key. Then he was inside. His finger found the switch, commanded the light that flooded the broad room of the shop.

It was like the agony of waking from the grasping fingers of a dream reluctant to give up its clutch upon his mind. Reality slowly forced back grudging memory and he stood there with a slow sense of devastation swirling about him like a knee-deep flood.

The brake—Mac's six thousand dollar wonder—was there.

Intact.

The machine tools, the floor, the workbenches were just as they had been before the impossible dream out of the future had disturbed Devon's uneventful, handbook life.

It was all as before—

Out of his own disappointments a terrible, corrosive hate distilled through his veins and condensed in the cold chambers of his heart and his brain.

Kennely had been here and made some kind of bargain with Tarman. They had returned the materials slashed from the shop, and Kennely had gone with them. He had gone to steal the show for himself, as always, to keep this ultimate of human experiences for himself alone.

Brian Kennely, the cavalier engineer—

Devon's legs began to move against the sluggishness in them. He moved towards the storeroom where every evidence of the mighty engine co-ordinator had vanished. Then he glanced down and stooped to pick up something from the floor.

The clipped remains of a telephone cord.

So Kennely had been taken just as he was talking with Devon. There was some final, terrible desolation in this. He dropped it quickly and hurried back towards the door where the watchman still slumped against the casing, his eyes squinty with enforced wakefulness and suspicion.

"Open up the developments lab," said Devon. "I'm going to work there the rest of the night."

In the lab, he flooded the place with light and slumped down at his desk. He began rummaging for the note Kennely had said he'd left. Devon finally found it in the middle

drawer where Kennely had slipped it through a crack.

For a moment he hated the substance of the note as much as whatever message it might hold, and the man who had written it.

Then he unfolded it and began reading:

O.K., Chris, you're hating my guts right now, but remember what you're always preaching to the dumb junior engineers they hire around here? The right component for the job. Remember? For this job that's me, not you.

You've envied the way I've done things. You've made that plain. But isn't it funny that I've always envied the things you've had, too? Don't you know I'd trade you a thousand times over?

Yeah, Martha and Kip and Pat. Don't you know you can't go barging around acting like a cavalier—when you've got them?

You wanted that field-engineering assignment on the Navy job and you'd probably have had it, too, and those Jap bullets that came so close to me missed maybe because they had *your* number on them. Besides, who'd have slugged out that design on the BC-62 command set? Two or three thousand guys, at least, owe their lives to you for that.

It all adds up to using the right component for the job, and that's only good engineering. You wouldn't try to use a 600 volt by-pass on a 10,000 volt plate supply. Nor a 10,000 volt by-pass in that beautiful little BC-62.

I'm the right component for this job. You're not equipped for it, but you're swell in the job you're doing. Let's not get hashed up with a lot of feedback over this business. I've talked Tarman into smuggling me into his age. He's no different than the Chinese bandits I once slugged it out with in Manchuria, sort of a truck driver and petty racketeer in his own day. He'd have your hide in an hour, Chris. I don't know what I'll find in his territory, but I suspect that there

are pretty strict rules against interlopers from unauthorized ages. It won't be easy to fake their customs and mores sufficiently to get by as a local citizen. And then there's the job of getting back if I do succeed in passing myself off and collecting some of their science. Tarman gave me some tips on how it might be done, but I don't trust him. I feel reasonably sure I can do it. This chance at their science is worth the gamble. If I lose there'll be no loss—to Martha and Kip and Pat.

So calm down and squelch those parasitics that are no doubt burning up your plates. Look for me back any time. I'll try to swing my return as close to my departure as possible. But when I come I'll have a slug of stuff that'll make us the top outfit in the business—Devon and Kennely. Better start looking around for some offices. If any of the boys ask about me just say I'm on an indefinite binge. Be looking for me.

Brian.

Devon put the letter down slowly. As he did so, he felt as if cooling, placid currents had begun to flow through him, quenching the bitter fires that had raged, and smothering the disappointment.

The right component.

Yeah, that applied to men as well as engineering factors and Kennely was right. He was the component for this job, not Devon.

Was there anything that Kennely didn't understand? Devon wondered. The man's genius extended not merely into the broad field of

electronics where he was master, but into all the facets of life.

Devon felt sudden, bitter shame for the feelings he'd had. They were both the right components for the jobs they were doing. As a team they'd be great, as long as he could keep from trying to invade Kennely's half of the partnership.

Right now he had a big enough job to keep him busy until Kennely's return. He had to get an entire new model of the weather station out of the model shop by another week. The Weather Bureau could use the prognosticator circuits, all right, but not in the little remote stations. It would be worth plenty to North State. That aspect of it made Devon momentarily unhappy, but there'd be plenty more where that came from—when Kennely came back.

When Kennely came back—

For a single bleak and bitter moment he considered the alternative to Kennely's return. Then he forced the dark vision out of his mind. Kennely'd be back. He was the right component for the job. That was foolproof engineering.

Devon suddenly leaned back and grinned to himself. There was one nice, unlooked for advantage in Kennely's absence. It would be possible now for somebody else to get a job out of the model shop.

THE END.