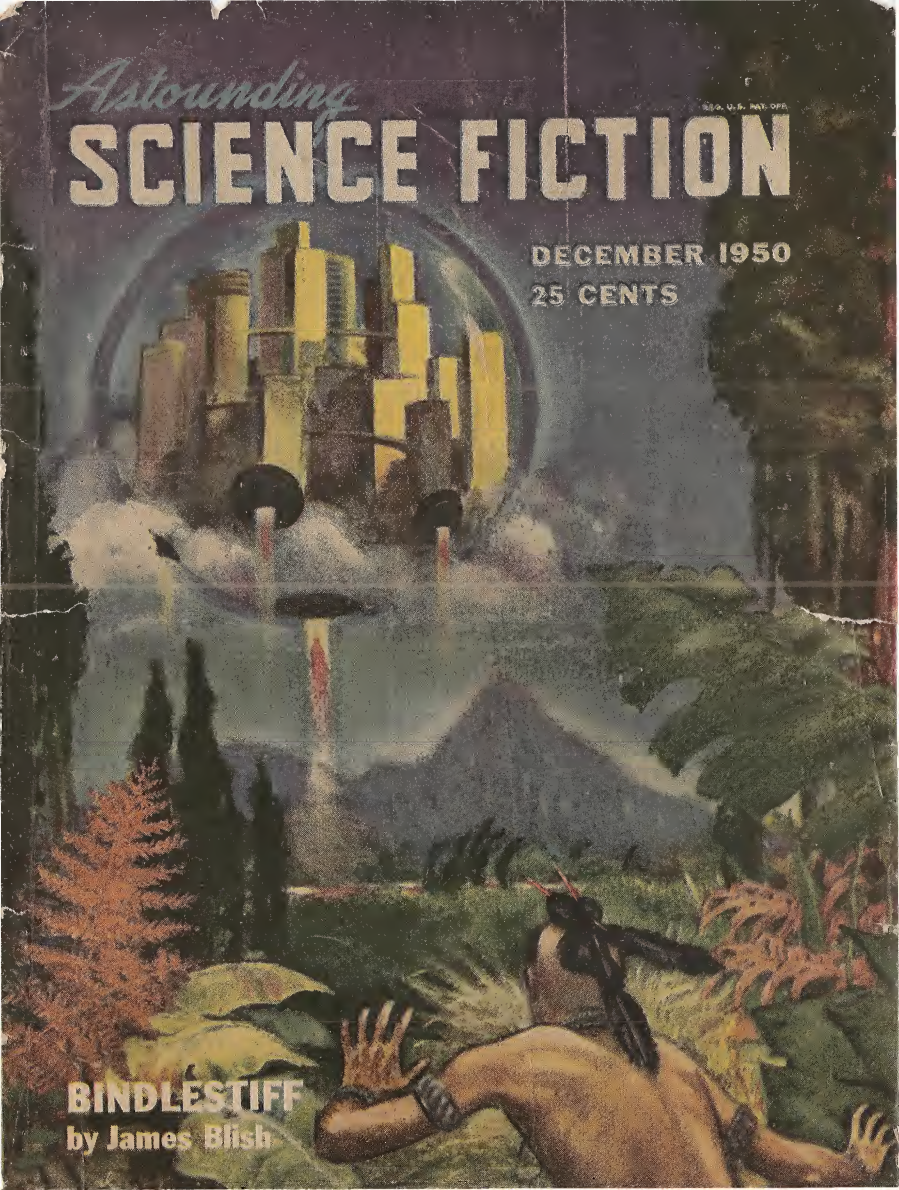
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BINDLESTIFF
by James Blish

Astounding
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NEXT ISSUE ON SALE DECEMBER 20, 1950

A SUBWAY NAMED MOBIUS

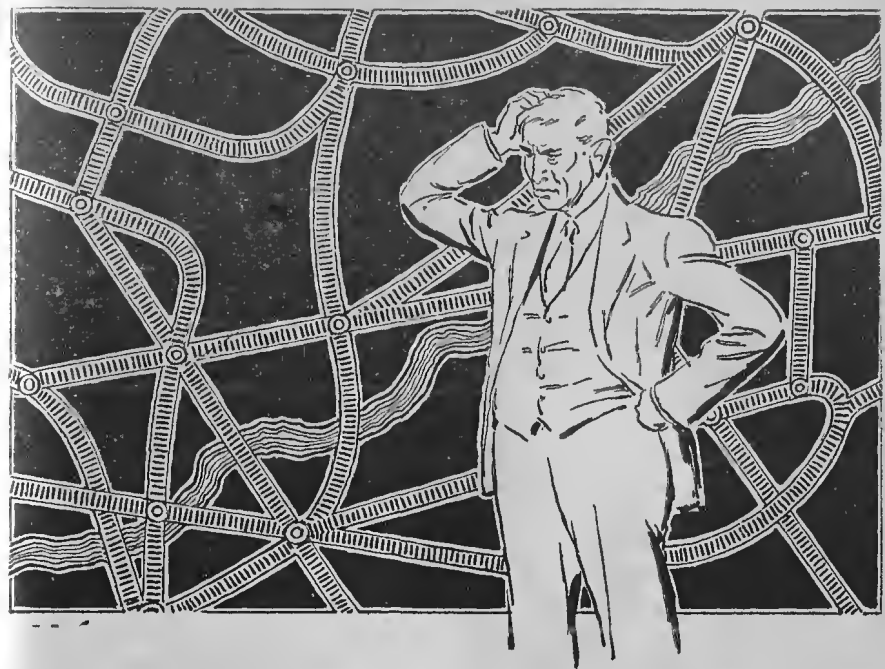
BY A. J. DEUTSCH

At Park Street you get off the surface car underground and walk downward to get on the elevated. A few more complications and inversions and — maybe a fine research program?

Illustrated by Orban

In a complex and ingenious pattern, the subway had spread out from a focus at Park Street. A shunt connected the Lechmere line with the Ashmont for trains southbound, and with the Forest Hills line for those northbound. Harvard and Brookline had been linked with a tunnel that passed through Kenmore Under, and during rush hours every other train was switched through the Kenmore Branch back to Egleston. The Kenmore Branch joined the Maverick Tunnel near Fields Corner. It climbed a hundred feet in two blocks to connect Copley Over with Scollay Square; then it dipped down again to join the Cambridge line at Boylston. The Boylston shuttle had finally tied together the seven principal lines on four different levels. It went into service, you remember, on March 3rd. After that, a train could travel from any one station to any other station in the whole system.

There were two hundred twenty-seven trains running the subways every weekday, and they carried about a million and a half passengers. The Cambridge-Dorchester train that disappeared on March 4th was Number 86. Nobody missed it at first. During the evening rush, the traffic was a little heavier than usual on that line. But a crowd is a crowd. The ad posters at the Forest Hills yards looked for 86 about 7:30, but neither of them mentioned its absence until three days later. The controller at the Milk Street Cross-Over



called the Harvard checker for an extra train after the hockey game that night, and the Harvard checker relayed the call to the yards. The dispatcher there sent out 87, which had been put to bed at ten o'clock, as usual. He didn't notice that 86 was missing.

It was near the peak of the rush the next morning that Jack O'Brien, at the Park Street Control, called Warren Sweeney at the Forest Hills yards and told him to put another train on the Cambridge run. Sweeney was short, so he went to the board and scanned it for a spare train and crew. Then, for the first time, he noticed that Gallagher had not checked out the night before. He put the tag up and left a note. Gallagher was due on at ten. At ten-thirty, Sweeney was down looking at the board again, and he noticed Gallagher's tag still up, and the note where he had left it. He groused to the checker and asked if Gallagher had come in late. The checker said he hadn't seen Gallagher at all that morning. Then Sweeney wanted to know who was running 86? A few minutes later he found that Dorkin's card was still up, although it was Dorkin's day off. It was 11:30 before he finally realized that he had lost a train.

Sweeney spent the next hour and a half on the phone, and he quizzed every dispatcher, controller, and checker on the whole system. When he finished his lunch at 1:30, he covered the whole net again. At 4:40,

just before he left for the day, he reported the matter, with some indignation, to Central Traffic. The phones buzzed through the tunnels and shops until nearly midnight before the general manager was finally notified at his home.

It was the engineer on the main switchbank who, late in the morning of the 6th, first associated the missing train with the newspaper stories about the sudden rash of missing persons. He tipped off the *Transcript*, and by the end of the lunch hour three papers had Extras on the streets. That was the way the story got out.

Kelvin Whyte, the General Manager, spent a good part of that afternoon with the police. They checked Gallagher's wife, and Dorkin's. The motorman and the conductor had not been home since the morning of the 4th. By mid-afternoon, it was clear to the police that three hundred and fifty Bostonians, more or less, had been lost with the train. The System buzzed, and Whyte nearly expired with simple exasperation. But the train was not found.

Roger Tupelo, the Harvard mathematician, stepped into the picture the evening of the 6th. He reached Whyte by phone, late, at his home, and told him he had some ideas about the missing train. Then he taxied to Tupelo's home in Newton and had the first of many talks with Whyte about Number 86.

Whyte was an intelligent man, a good organizer, and not without imagination. "But I don't know what you're talking about!" he expostulated.

Tupelo was resolved to be patient. "This is a very hard thing for *anybody* to understand, Mr. Whyte," he said. "I can see why you are puzzled. But it's the only explanation. The train has vanished, and the people on it. But the System is closed. Trains are conserved. It's somewhere on the System!"

Whyte's voice grew louder again. "And I tell you, Dr. Tupelo, that train is *not* on the System! It is *not!* You can't overlook a seven-car train carrying four hundred passengers. The System has been combed. Do you think I'm trying to *hide* the train?"

"Of course not. Now look, let's be reasonable. We know the train was en route to Cambridge at 8:40 a.m. on the 4th. At least twenty of the missing people probably boarded the train a few minutes earlier at Washington, and forty more at Park Street Under. A few got off at both stations. And that's the last. The ones who were going to Kendall, to Central, to Harvard — they never got there. The train did not get to Cambridge."

"I know that, Dr. Tupelo," Whyte said savagely. "In the tunnel under the River, the train turned into a boat. It left the tunnel and sailed for Africa."

"No, Mr. Whyte. I'm trying to tell you. It hit a node."

Whyte was livid. "What is a node!" he exploded. "The System keeps the tracks clear. Nothing on the tracks but trains, no nodes left lying around—"

"You still don't understand. A node is not an obstruction. It's a singularity. A pole of high order."

Tupelo's explanations that night did not greatly clarify the situation for Kelvin Whyte. But at two in the morning, the general manager conceded to Tupelo the privilege of examining the master maps of the System. He put in a call first to the police, who could not assist him with his first attempt to master topology, and then, finally, to Central Traffic. Whyte taxied down there alone, and pored over the maps till morning. He had coffee and a snail, and then went to Whyte's office.

He found the general manager on the telephone. There was a conversation having to do with another, more elaborate inspection of the Dorchester-Cambridge tunnel under the Charles River. When the conversation ended, Whyte slammed the telephone into its cradle and glared at Tupelo. The mathematician spoke first.

"I think probably it's the new shuttle that did this," he said.

Whyte gripped the edge of his desk and prowled silently through his vocabulary until he had located some civil words. "Dr. Tupelo," he said, "I have been awake all night going over your theory. I don't understand it all. I don't know what the Boylston shuttle has to do with this."

"Remember what I was saying last night about the connective properties of networks?" Tupelo asked quietly. "Remember the Möbius band we made—the surface with one face and one edge? Remember this—?" and he removed a little glass Klein bottle from his pocket and placed it on the desk.

Whyte sat back in his chair and stared wordlessly at the mathematician. Three emotions marched across his face in quick succession—anger, bewilderment, and utter dejection. Tupelo went on.

"Mr. Whyte, the System is a network of amazing topological complexity. It was already complex before the Boylston shuttle was installed, and of a high order of connectivity. But this shuttle makes the network absolutely unique. I don't fully undertsand it, but the situation seems to be something like this: the shuttle has made the connectivity of the whole System of an order so high that I don't know how to calculate it. I suspect the connectivity has become infinite."

The general manager listened as though in a daze. He kept his eyes glued to the little Klein bottle.

"The Möbius band," Tupelo said, "has unusual properties because it has a singularity. The Klein bottle, with two singularities, manages to be inside of itself. The topologists know surfaces with as many as a thousand singularities, and they have properties that make the Möbius band and the Klein bottle both look simple. But a network with infinite connectivity must have an infinite number of singularities. Can you im-

agine what the properties of that network could be?"

After a long pause, Tupelo added: "I can't either. To tell the truth, the structure of the System, with the Boylston shuttle, is completely beyond me. I can only guess."

Whyte swiveled his eyes up from the desk at a moment when anger was the dominant feeling within him. "And you call yourself a mathematician, Professor Tupelo!" he said.

Tupelo almost laughed aloud. The incongruousness, the absolute foolishness of the situation, all but overwhelmed him. He smiled thinly, and said: "I'm no topologist. Really, Mr. Whyte, I'm a tyro in the field—not much better acquainted with it than you are. Mathematics is a big pasture. I happen to be an algebraist."

His candor softened Whyte a little. "Well, then," he ventured, "if you don't understand it, maybe we should call in a topologist. Are there any in Boston?"

"Yes and no," Tupelo answered. "The best in the world is at Tech."

Whyte reached for the telephone. "What's his name?" he asked. "I'll call him."

"Merritt Turnbull. He can't be reached. I've tried for three days."

"Is he out of town?" Whyte asked. "We'll send for him—emergency."

"I don't know. Professor Turnbull is a bachelor. He lives alone at the Brattle Club. He has not been seen since the morning of the 4th."

Whyte was uncommonly perceptive. "Was he on the train?" he asked tensely.

"I don't know," the mathematician replied. "What do you think?"

There was a long silence. Whyte looked alternately at Tupelo and at the glass object on the desk. "I don't understand it," he said finally. "We've looked everywhere on the System. There was no way for the train to get out."

"The train didn't get out. It's still on the System," Tupelo said.

"Where?"

Tupelo shrugged. "The train has no real 'where.' The whole System is without real 'whereness.' It's double-valued, or worse."

"How can we find it?"

"I don't think we can," Tupelo said.

There was another long silence. Whyte broke it with a loud exclamation. He rose suddenly, and sent the Klein bottle flying across the room. "You are crazy, professor!" he shouted. Between midnight tonight and 6:00 a.m. tomorrow, we'll get every train out of the tunnels. I'll send in three hundred men, to comb every inch of the tracks—every inch of the one hundred eighty-three miles. We'll find the train! Now, please excuse me." He glared at Tupelo.

Tupelo left the office. He felt tired, completely exhausted. Mechanically, he walked along Washington Street toward the Essex Station. Halfway down the stairs, he stopped abruptly, looked around him slowly. Then he ascended again to the street and hailed a taxi. At home, he helped himself to a double shot. He fell into bed.

At 3:30 that afternoon he met his class in "Algebra of Fields and Rings." After a quick supper at the Crimson Spa, he went to his apartment and spent the evening in a second attempt to analyze the connective properties of the System. The attempt was vain, but the mathematician came to a few important conclusions. At eleven o'clock he telephoned Whyte at Central Traffic.

"I think you might want to consult me during tonight's search," he said. "May I come down?"

The general manager was none too gracious about Tupelo's offer of help. He indicated that the System would solve this little problem without any help from harebrained professors who thought that whole subway trains could jump off into the fourth dimension. Tupelo submitted to Whyte's unkindness, then went to bed. At about 4:00 a.m. the telephone awakened him. His caller was a contrite Kelvin Whyte.

"Perhaps I was a bit hasty last night, professor," he stammered. "You may be able to help us after all. Could you come down to the Milk Street Cross-Over?"

Tupelo agreed readily. He felt none of the satisfaction he had anticipated. He called a taxi, and in less than half an hour was at the prescribed station. At the foot of the stairs, on the upper level, he saw that the tunnel was brightly lighted, as during normal operation of the System. But the platforms were deserted except for a tight little knot of seven men near the far end. As he walked towards the group, he noticed that two were policemen. He observed a one-car train on the track beside the platform. The forward door was open, the car brightly lit, and empty. Whyte heard his footsteps and greeted him sheepishly.

"Thanks for coming down, professor," he said, extending his hand. "Gentlemen, Dr. Roger Tupelo, of Harvard. Dr. Tupelo, Mr. Kennedy, our chief engineer; Mr. Wilson, representing the Mayor; Dr. Gannot, of Mercy Hospital." Whyte did not bother to introduce the motorman and the two policemen.

"How do you do," said Tupelo. "Any results, Mr. Whyte?"

The general manager exchanged embarrassed glances with his companions. "Well . . . yes, Dr. Tupelo," he finally answered. "I think we do have some results, of a kind."

"Has the train been seen?"

"Yes," said Whyte. "That is, practically seen. At least, we know it's somewhere in the tunnels." The six others nodded their agreement.

Tupelo was not surprised to learn that the train was still on the System. After all, the System was closed. "Would you mind telling me just what happened?" Tupelo insisted.

"I hit a red signal," the motorman volunteered. "Just outside the Copley junction."

"The tracks have been completely cleared of all trains," Whyte explained, "except for this one. We've

been riding it, all over the System, for four hours now. When Edmunds, here, hit a red light at the Copley junction, he stopped, of course. I thought the light must be defective, and told him to go ahead. But then we heard another train pass the junction."

"Did you see it?" Tupelo asked.

"We couldn't see it. The light is placed just behind a curve. But we all heard it. There's no doubt the train went through the junction. And it must be Number 86, because our car was the only other one on the tracks."

"What happened then?"

"Well, then the light changed to yellow, and Edmunds went ahead."

"Did he follow the other train?"

"No. We couldn't be sure which way it was going. We must have guessed wrong."

"How long ago did this happen?"

"At 1:38, the first time—"

"Oh," said Tupelo, then it happened again later?"

"Yes. But not at the same spot, of course. We hit another red signal near South Station at 2:15. And then at 3:28—"

Tupelo interrupted the general manager. "Did you see the train at 2:15?"

"We didnt' even hear it, that time. Edmunds tried to catch it, but it must have turned off onto the Boylston shuttle."

"What happened at 3:28?"

"Another red light. Near Park Street." We heard it up ahead of us."

"But you didn't see it?"

"No. There is a little slope beyond the light. But we all heard it. The only thing I don't understand, Dr. Tupelo, is how that train could run the tracks for nearly five days without anybody seeing—"

Whyte's words trailed off into silence, and his right hand went up in a peremptory gesture for quiet. In the distance, the low metallic thunder of a fast-rolling train swelled up suddenly into a sharp, shrill roar of wheels below. The platform vibrated perceptibly as the train passed.

"Now we've got it!" Whyte exclaimed. "Right past the men on the platform below!" He broke into a run towards the stairs to the lower level. All the others followed him, except Tupelo. He thought he knew what was going to happen. It did. Before Whyte reached the stairs, a policeman bounded up to the top.

"Did you see it, now?" he shouted.

Whyte stopped in his tracks, and the others with him.

"Did you see that train?" the policeman from the lower level asked again, as two more men came running up the stairs.

"What happened?" Wilson wanted to know.

"Didn't *you* see it?" snapped Kennedy.

"Sure not," the policeman replied. "It passed through up here."

"It did *not*," roared Whyte. "Down there!"

The six men with Whyte glowered at the three from the lower level. Tupelo walked to Whyte's elbow. "The train can't be seen, Mr. Whyte," he said quietly.

Whyte looked down at him in utter disbelief. "You heard it yourself. It passed right below—"

"Can we go to the car, Mr. Whyte?" Tupelo asked. "I think we ought to talk a little."

Whyte nodded dumbly, then turned to the policeman and the others who had been watching at the lower level. "You really didn't see it?" he begged them.

"We heard it," the policeman answered. "It passed up here, going that way, I think," and he gestured with his thumb.

"Get back downstairs, Maloney," one of the policemen with Whyte commanded. Maloney scratched his head, turned, and disappeared below. The two other men followed him. Tupelo led the original group to the car beside the station platform. They went in and took seats, silently. Then they all watched the mathematician and waited.

"You didn't call me down here tonight just to tell me you'd found the missing train," Tupelo began, looking at Whyte. "Has this sort of thing happened before?"

Whyte squirmed in his seat and exchanged glances with the chief engineer. "Not exactly like this," he said, evasively, "but there have been some funny things."

"Like what?" Tupelo snapped.

"Well, like the red lights. The watchers near Kendall found a red light at the same time we hit the one near South Station."

"Go on."

"Mr. Sweeney called me from Forest Hills at Park Street Under. He heard the train there just two minutes after we heard it at the Copley junction. Twenty-eight track miles away."

"As a matter of fact, Dr. Tupelo," Wilson broke in, "several dozen men have seen lights go red, or have heard the train, or both, inside of the last four hours. The thing acts as though it can be in several places at once."

"It can," Tupelo said.

"We keep getting reports of watchers seeing the thing," the engineer added. "Well, not exactly seeing it, either, but everything except that. Sometimes at two or even three places, far apart, at the same time. It's sure to be on the tracks. Maybe the cars are uncoupled."

"Are you really sure it's on the tracks, Mr. Kennedy?" Tupelo asked.

"Positive," the engineer said. "The dynamometers at the power house show that it's drawing power. It's been drawing power all night. So at 3:30 we broke the circuits. Cut the power."

"What happened?"

"Nothing," Whyte answered. "Nothing at all. The power was off for twenty minutes. During that time, not one of the two hundred fifty men in the tunnels saw a red light or heard a train. But the power wasn't on for five minutes before we had two reports again—one from Ar-

lighton, the other from Egleston."

There was a long silence after Whyte finished speaking. In the tunnel below, one man could be heard calling something to another. Tupelo looked at his watch. The time was 5:20.

"In short, Dr. Tupelo," the general manager finally said, "we are compelled to admit that there may be something in your theory." The others nodded agreement.

"Thank you, gentlemen," Tupelo said.

The physician cleared his throat. "Now about the passengers," he began. "Have you any idea what—?"

"None," Tupelo interrupted.

"What should we do, Dr. Tupelo?" the mayor's representative asked.

"I don't know. What can you do?"

"As I understand it from Mr. Whyte," Wilson continued, "the train has . . . well, it has jumped into another dimension. It isn't really on the System at all. It's just gone. Is that right?"

"In a manner of speaking."

"And this . . . er . . . peculiar behavior has resulted from certain mathematical properties associated with the new Boylston shuttle?"

"Correct."

"And there is nothing we can do to bring the train back to . . . uh . . . this dimension?"

"I know of nothing."

Wilson took the bit in his teeth. "In this case, gentlemen," he said, "our course is clear. First, we must close off the new shuttle, so this fantastic thing can never happen again. Then, since the missing train is really gone, in spite of all these red lights and noises, we can resume normal operation of the System. At least there will be no danger of collision—which has worried you so much, Whyte. As for the missing train and the people on it—" He gestured them into infinity. "Do you agree, Dr. Tupelo?" he asked the mathematician.

Tupelo shook his head slowly. "Not entirely, Mr. Wilson," he responded. "Now, please keep in mind that I don't fully comprehend what has happened. It's unfortunate that you won't find anybody who can give a good explanation. The one man who might have done so is Professor Turnbull, of Tech, and he was on the train. But in any case, you will want to check my conclusions against those of some competent topologists. I can put you in touch with several."

"Now, with regard to the recovery of the missing train, I can say that I think this is not hopeless. There is a finite probability, as I see it, that the train will eventually pass from the nonspatial part of the network, which it now occupies, back to the spatial part. Since the nonspatial part is wholly inaccessible, there is unfortunately nothing we can do to bring about this transition, or even to predict when or how it will occur. But the possibility of the transition will vanish if the Boylston shuttle is taken out. It is just this section of the track that gives the network its

essential singularities. If the singularities are removed, the train can never reappear. Is this clear?"

It was not clear, of course, but the seven listening men nodded agreement. Tupelo continued.

"As for the continued operation of the System while the missing train is in the nonspatial part of the network, I can only give you the facts as I see them and leave to your judgment the difficult decision to be drawn from them. The transition back to the spatial part is unpredictable, as I have already told you. There is no way to know when it will occur, or where. In particular, there is a fifty percent probability that, if and when the train reappears, it will be running on the wrong track. Then there will be a collision, of course."

The engineer asked: "To rule out this possibility, Dr. Tupelo, couldn't we leave the Boylston shuttle open, but send no trains through it? Then, when the missing train reappears on the shuttle, it cannot meet another train."

"That precaution would be ineffective, Mr. Kennedy," Tupelo answered. "You see, the train can reappear anywhere on the System. It is true that the System owes its topological complexity to the new shuttle. But, with the shuttle in the System, it is now the whole System that possesses infinite connectivity. In other words, the relevant topological property is a property *derived* from the shuttle, but *belonging to* the whole System. Remember that the train made its first transition at a point between Park and Kendall, more than three miles away from the shuttle."

"There is one question more you will want answered. If you decide to go on operating the System, with the Boylston shuttle left in until the train reappears, can this happen again, to another train? I am not certain of the answer, but I think it is: No. I believe an exclusion principle operates here, such that only one train at a time can occupy the nonspatial network."

The physician rose from his seat. "Dr. Tupelo," he began, timorously, "when the train does reappear, will the passengers—?"

"I don't know about the people on the train," Tupelo cut in. "The topological theory does not consider such matters." He looked quickly at each of the seven tired, querulous faces before him. "I am sorry, gentlemen," he added, somewhat more gently. "I simply do not know." To Whyte, he added: "I think I can be of no more help tonight. You know where to reach me." And, turning on his heel, he left the car and climbed the stairs. He found dawn spilling over the street, dissolving the shadows of night.

That impromptu conference in a lonely subway car was never reported in the papers. Nor were the full results of the night-long vigil over the dark and twisted tunnels. During the week that followed, Tupelo participated in four more for-

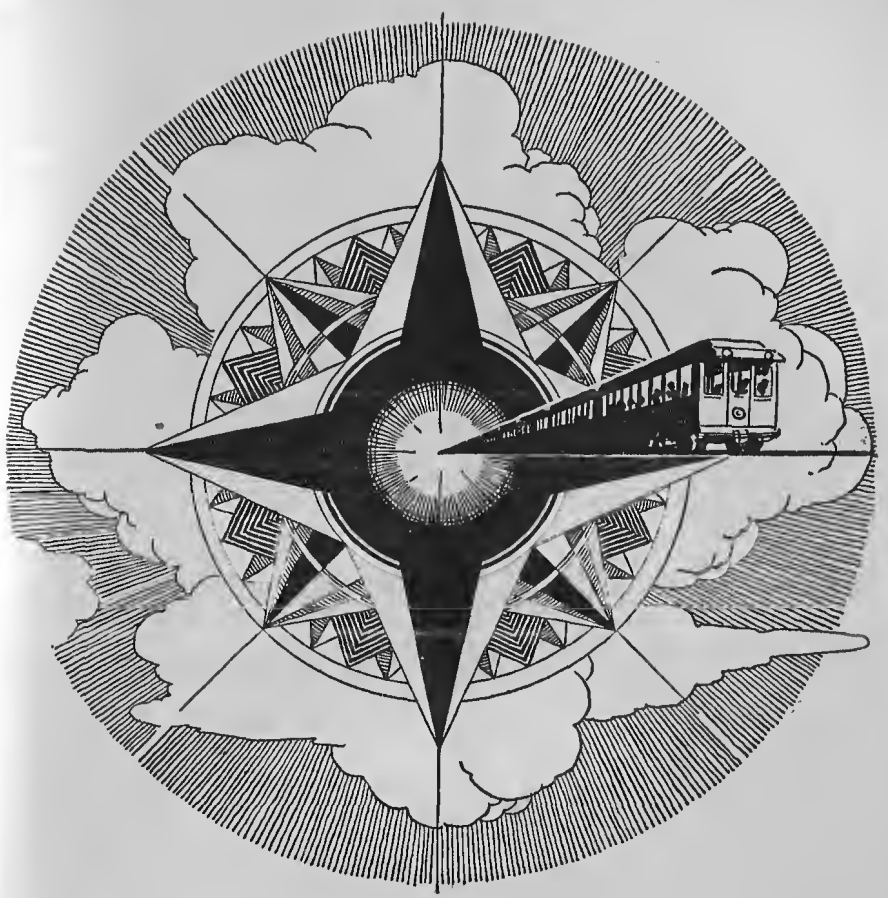
mal conferences with Kelvin Whyte and certain city officials. At two of these, other topologists were present. Ornstein was imported to Boston from Philadelphia, Kashta from Chicago, and Michaelis from Los Angeles. The mathematicians were unable to reach a concensus. None of the three would fully endorse Tupelo's conclusions, although Kashta indicated that there *might* be something to them. Ornstein averred that a finite network could not possess infinite connectivity, although he could not prove this proposition and could not actually calculate the connectivity of the System. Michaelis expressed his opinion that the affair was a hoax and had nothing whatever to do with the topology of the System. He insisted that if the train could not be found on the System then the System must be open, or at least must once have been open.

But the more deeply Tupelo analyzed the problem, the more fully he was convinced of the essential correctness of his first analysis. From the point of view of topology, the System soon suggested whole families of multiple-valued networks, each with an infinite number of infinite discontinuities. But a definitive discussion of these new spatio-hyperspatial networks somehow eluded him. He gave the subject his full attention for only a week. Then his other duties compelled him to lay the analysis aside. He resolved to go back to the problem later in the spring, after courses were over.

Meanwhile, the System was operated as though nothing untoward had happened. The general manager and the mayor's representative had somehow managed to forget the night of the search, or at least to reinterpret what they had seen and not seen. The newspapers and the public at large speculated wildly, and they kept continuing pressure on Whyte. A number of suits were filed against the System on behalf of persons who had lost a relative. The State stepped into the affair and prepared its own thorough investigation. Recriminations were sounded in the halls of Congress. A garbled version of Tupelo's theory eventually found its way into the press. He ignored it, and it was soon forgotten.

The weeks passed, and then a month. The State's investigation was completed. The newspaper stories moved from the first page to the second; to the twenty-third; and then stopped. The missing persons did not return. In the large, they were no longer missed.

One day in mid-April, Tupelo traveled by subway again, from Charles Street to Harvard. He sat stiffly in the front of the first car, and watched the tracks and gray tunnel walls hurl themselves at the train. Twice the train stopped for a red light, and Tupelo found himself wondering whether the other train was really just ahead, or just beyond space. He half-hoped, out of curiosity, that his exclusion principle was wrong, that the train might make the transition. But he arrived at Harvard on time. Only he among



the passengers had found the trip exciting.

The next week he made another trip by subway, and again the next. As experiments, they were unsuccessful, and much less tense than the first ride in mid-April. Tupelo began to doubt his own analysis. Sometime in May, he reverted to the practice of commuting by subway between his Beacon Hill apartment and his office at Harvard. His mind stopped racing down the knotted gray caverns ahead of the train. He read the morning newspaper, or the abstracts in *Reviews of Modern Mathematics*.

Then there was one morning when he looked up from the newspaper and sensed something. He pushed panic back on its stiff, quivering

spring, and looked quickly out the window at his right. The lights of the car showed the black and gray lines of wall-spots streaking by. The trucks ground out their familiar steely dissonance. The train rounded a curve and crossed a junction that he remembered. Swiftly, he recalled boarding the train at Charles, noting the girl on the ice-carnival poster at Kendall, meeting the southbound train going into Central.

He looked at the man sitting beside him, with a lunch pail on his lap. The other seats were filled, and there were a dozen or so straphangers. A mealy-faced youth near the front door smoked a cigarette, in violation of the rules. Two girls behind him across the aisle were discussing a club meeting. In the seat ahead, a young woman was scolding her little son. The man on the aisle, in the seat ahead of that, was reading the paper. The Transit-Ad above him extolled Florida oranges.

He looked again at the man two seats ahead and fought down the terror within. He studied that man. What was it? Brunet, graying hair; a roundish head; wan complexion; rather flat features; a thick neck, with the hairline a little low, a little ragged; a gray, pin-stripe suit. While Tupelo watched, the man waved a fly away from his left ear. He swayed a little with the train. His newspaper was folded vertically down the middle. His *newspaper*! It was last March's!

Tupelo's eyes swiveled to the man beside him. Below his lunch pail was a paper. Today's. He turned in his seat and looked behind him. A young man held the *Transcript* open to the sports pages. The date was March 4th. Tupelo's eyes raced up and down the aisle. There were a dozen passengers carrying papers ten weeks old.

Tupelo lunged out of his seat. The man on the aisle muttered a curse as the mathematician crowded in front of him. He crossed the aisle in a bound and pulled the cord above the windows. The brakes sawed and screeched at the tracks, and the train ground to a stop. The startled passengers eyed Tupelo with hostility. At the rear of the car, the door flew open and a tall, thin man in a blue uniform burst in. Tupelo spoke first.

"Mr. Dorkin?" he called, vehemently.

The conductor stopped short and groped for words.

"There's been a serious accident, Dorkin," Tupelo said, loudly, to carry over the rising swell of protest from the passengers. "Get Gallagher back here right away!"

Dorkin reached up and pulled the cord four times. "What happened?" he asked.

Tupelo ignored the question, and asked one of his own. "Where have you been, Dorkin?"

The conductor's face was blank. "In the next car, but—"

Tupelo cut him off. He glanced at his watch, then shouted at the passengers. "It's ten minutes to nine on May 17th!"

The announcement stilled the rising clamor for a moment. The passengers exchanged bewildered glances.

"Look at your newspapers!" Tupelo shouted. "Your newspapers!"

The passengers began to buzz. As they discovered each other's papers, the voices rose. Tupelo took Dorkin's arm and led him to the rear of the car. "What time is it?" he asked.

"8:21," Dorkin said, looking at his watch.

"Open the door," said Tupelo, motioning ahead. "Let me out. Where's the phone?"

Dorkin followed Tupelo's directions. He pointed to a niche in the tunnel wall a hundred yards ahead. Tupelo vaulted to the ground and raced down the narrow lane between the cars and the wall. "Central Traffic!", he barked at the operator. He waited a few seconds, and saw that a train had stopped at the red signal behind his train. Flashlights were advancing down the tunnel. He saw Gallagher's legs running down the tunnel on the other side of 86. "Get me Whyte!" he commanded, when Central Traffic answered. "Emergency!"

There was a delay. He heard voices rising from the train beside him. The sound was mixed—anger, fear, hysteria.

"Hello!" he shouted. "Hello! Emergency! Get me Whyte!"

"I'll take it," a man's voice said at the other end of the line. "Whyte's busy!"

"Number 86 is back," Tupelo called. "Between Central and Harvard now. Don't know when it made the jump. I caught it at Charles ten minutes ago, and didn't notice it till a minute ago."

The man at the other end gulped hard enough to carry over the telephone. "The passengers?" he croaked.

"All right, the ones that are left," Tupelo said. "Some must have got off already at Kendall and Central."

"Where have they been?"

Tupelo dropped the receiver from his ear and stared at it, his mouth wide open. Then he slammed the receiver onto the hook and ran back to the open door.

Eventually, order was restored, and within a half hour the train proceeded to Harvard. At the station, the police took all passengers into protective custody. Whyte himself arrived at Harvard before the train did. Tupelo found him on the platform.

Whyte motioned weakly towards the passengers. "They're really all right?" he asked.

"Perfectly," said Tupelo. "Don't know they've been gone."

"Any sign of Professor Turnbull?" asked the general manager.

"I didn't see him. He probably got off at Kendall, as usual."

"Too bad," said Whyte. "I'd like to see him!"

"So would I!" Tupelo answered.

"By the way, now is the time to close the Boylston shuttle."

"Now is too late," Whyte said. "Train 143 vanished twenty-five minutes ago, between Egleston and Dorchester."

Tupelo stared past Whyte, and down and down the tracks.

"We've got to find Turnbull," Whyte said.

Tupelo looked at Whyte and smiled thinly.

"Do you really think Turnbull got off this train at Kendall?" he asked.

"Of course!" answered Whyte. "Where else?"

THE END.

THE ANALYTICAL LABORATORY

Once in a while, the An Lab report will line the stories up in the exact order of their appearance on the contents page. That, be assured, is coincidence; the order of presentation of the stories in any issue is a matter of jigsaw-puzzling the type into the available space, plus the convention of putting the cover story in #1 place in the magazine. Since the cover story is always a novelette or serial, that's sort of fixed by factors other than Editorial story-preference. (Though, naturally, we don't make cover-stories out of material we feel doesn't merit special attention.)

At any rate, the September An Lab report matches the contents page listing:

September, 1950 Issue

Place	Story	Author	Points
1.	The Lion and The Lamb	Fritz Leiber	2.21
2.	Paradise Street	Lawrence O'Donnell	2.56
3.	The Sack	William Morrisson	2.78
4.	Meteor	William T. Powers	3.55
5.	Spy Scare	H. B. Fyfe	4.05

But despite this coincidence, the order of listing on the contents page is *not* intended to represent Editor's-choice listings.

THE EDITOR.

VARIETIES OF CULTURE

BY ARTHUR J. COX

A fact article on human cultural patterns — and if human beings, here on one planet, can go this far in one extreme or another, what may we find Outside?

Your first impression was probably wrong. The word "culture" as used in the title has a different meaning than that for which it is used in every day conversation. Here, it actually has more resemblance to the cultures familiar to biochemists and bacteriologists than that used by the literary intelligentsia, though it does refer to human societies.

I will start with an analogy which was first used, I believe, by the late and very brilliant cultural anthropologist, Ruth Benedict.

Consider for a moment the subject of languages and human speech sounds in general. The number of sounds which can be made by the human oral and nasal cavities—lingual, labial, dental, palatal, guttural, both voiced and voiceless—are, for all practical purposes, unlimited. The significant point is that only thirty-five of these sounds are generally used in the English language. The same, rough proportions hold true for the two thousand eight hundred other languages and major dialects. That is, only fractions of the total are utilized, although the sounds which are used vary widely from language to language. Even languages as similar as English and French and Spanish have marked differences in sounds which can be utilized.

Obviously, no language can use all the sounds known on pain of being unintelligible. Therefore, in the creation—evolution—of a language, selection is the prime process.

It is the same with general human behavior: The number of things which human organisms are capable of—actions, reactions, interests, activities — are similarly unlimited. *Thus, a given society in order to have any structure has to select certain portions of human behavior and build itself upon these foundations.*

Every society on the face of the planet has made such selection of its institutions. One culture, from the