

From ancient and beautiful Prague, host to the golem and home of the robot, comes the second of three stories by Czechoslovak psychiatrist Dr. Nesvadba. And asks certain questions about love, science, and the human heart. . .

THE EINSTEIN BRAIN

by Josef Nesvadba

"THE SITUATION IS EXTREMELY serious," Professor Kozhevkin brought his report to a close. "During the life of the last few generations our progress in various technical fields has liberated mankind, freed humanity from drudgery, hunger and war, and opened the way to the Universe. I can still remember the time when the Engineering Faculties of our Universities had the pick of the finest students, and when it was the heart's desire of every young man to study a branch of technical science. Look at things today! Our young people have lost interest in what we are doing. Physics, chemistry and mathematics suddenly seem to have lost all interest for them. Every year fewer and fewer students apply for admission to our Engineering Faculty in Alma-Ata. There is a danger that in a few years we shall find ourselves obliged to restrict our research work and set limits to the number

of staff employed. This state of affairs cannot be allowed to go on. Our machines cannot work without people in control, they cannot take care of the needs of mankind unless someone is running them. Energetic measures must be taken."

We all clapped and Dr. Kozhevkin sat down.

"At our University in Toronto," Professor Clark Smith-Jones took the floor, "things are almost worse. We have already had to shut down several specialized departments for certain aspects of space research and the Department for Research into the Nature of Elementary Particles. While students flock to hear lectures on Goethe or Herder's views on art, we were forced to give up the gymnasium to the aesthetics lecturer, although when the University was founded his department was so insignificant it was almost forgotten. And what is so shocking about it all, is that we

cannot imagine how this state of affairs was brought about. Is it the natural desire of the younger generation to rebel against their parents and do something different? Or is it some kind of unconscious protest (here Professor Kozhevkin permitted himself a smile) against figures as the symbol of order and therefore the symbol of paternal authority? Out psychologists have been studying the matter for a long time without coming to any conclusion, alas."

We clapped again and Professor Smith-Jones sat down. For a while there was an uncomfortable silence. Nobody felt like going on with the discussion. They were afraid to speak up. And yet the reasons for this changing trend have been known long enough. I decided to speak myself.

"There is no point in refusing to face the truth," I got down to brass tacks at once. "We've come to the end of our resources. We've reached a dead-end. It is true that since the end of the nineteenth century the technical sciences have transformed the world and thrown all other branches of knowledge into the shade; they have made it possible for humanity to devote itself to more important tasks and so on and so forth. We are all aware of these things. But technical progress has not solved the fundamental problems of the human mind. People are still asking how and why we should live,

we still know nothing of how the universe came into being, and we still cannot understand the fourth dimension Einstein worked out. Whenever we set this question to our cybernetic machines they refuse it as unscientific, wrongly set out, too personal, private, human. But this does not make the question any the less important for every one of us. Professor Smith-Jones and Professor Kozhevkin both have the most ingeniously equipped laboratories that can be imagined; their brain machines solve in three seconds mathematical problems that would take even a clever mathematician a lifetime to work out—but these machines cannot answer our fundamental questions. And so we find ourselves in a vicious circle. Physics has become a practical branch of science, and the extent to which it is dependent on philosophy is becoming clearer day by day; it's about the same as the way lace-making is dependent on the artist's design. That is why we are losing the interest of the younger generation. We are not concerned with the fundamental things of life. We have ended where we began. We can make machines which do the washing or the cooking most efficiently, perform surgical operations and fly through space, just as our forefathers hundreds of years ago made mechanical pianoplayers and dancing bears. They used to display their inventions at

circuses. Thoughtful people considered these inventors no more than toy-makers, charlatans. The same fate menaces us."

Nobody clapped. Perhaps I had laid it on a bit thick. Smith-Jones was frowning and the others were muttering to each other.

"What have you got against my machines, madam?" Professor Smith-Jones leaped to his feet. "With the exception of the brain machines constructed by Professor Kozhevkin (here he bowed) they are the most efficient brain machines in the world. Nobody present here today can claim to have such a fine brain. Not even you, madam . . ."

"I do not think as fast, or as faultlessly, you are right. But I can think up new problems, I can keep all your machines occupied dealing with my doubts and ignorance, and I like watching the sunset . . ." Smith-Jones was smiling ironically. As if he regretted having bothered to reply to a woman colleague of so little importance. He, one of the greatest brains in the scientific world.

"It is of course true that our brain machines cannot understand the fourth dimension, and can only describe the secrets of the universe . . ." Professor Kozhevkin admitted, and seemed to be sorry. "From the point of view of the physical sciences the question is of course wrongly set out."

"That is why I suggest constructing a biological brain," I took the floor again, "because it would be more human than your mechanical brains, and would be able to understand. A real knowledge machine."

"The Einstein brain?" Smith-Jones smiled again, scornfully. His joke decided the name for my experiment. From then on everybody talked about the well-known business of the Einstein brain.

My plan was a simple one; I had already discussed it with physiologists and biologists. With the help of special apparatus we would find the three most capable brains recently dead, and condense them by a special process to make one single organ which would be subjected to electrical stimulation after the resuscitation processes.

On the day fixed for the experiment I sent my assistants into all the regional hospitals; they were equipped with special ratiometers. The most capable brains were shown to be those of a professor of architecture who was killed by a fall from some scaffolding, and a little known poet. We took his brain, bearing in mind Einstein's aphorism that imagination is more important than knowledge. As the third brain we took what of Mrs. Anna Novak, who had been killed in a road accident. Her brain gave us great food for thought. She was a housewife and the mother of a family, who had never achieved

very much in her life, and yet our apparatus recorded the greatest capacity precisely in this brain. We believed these recordings and started the work of condensing; it was of course a long and difficult business. But everything went according to plan and the experiment proper could begin.

I fed the brain a basic physical education, and applied electrical stimulation to the appropriate area. The electric current appeared to act as an inspiration stimulating the brain to emit its conclusions promptly by means of small antennae situated on the surface. On our infinitely sensitive recorder we registered the answer, which seemed to confirm some of the hypotheses put forward by Professor Kozhevkin. I sent off a telegram to Alma-Ata straight away. Kozhevkin's hypotheses had been published only recently, in physics journals. Certainly neither a professor of architecture, nor a poet, nor a housewife, were likely to have been readers of physics journals. It would appear, then, that my brain had evolved these conclusions independently.

The weeks which followed were joyful indeed. The brain emitted further solutions, developed Kozhevkin's hypotheses further, worked out combinations of these results and came to conclusions which even the Professor himself had not yet dared to make public.

But there was one unfortunate thing about the brain. It was irregular. I was worried about it. The brain did not seem able to get used to a regular working day. It stopped responding promptly to stimulation. Sometimes it would answer the stimulation with a foolish remark, as though it was trying to make a joke. Or it would work at night, when I was no longer in the laboratory, as though it had "saved up" the stimulating energy we had applied to it.

A month later the brain stopped working altogether. It was "alive"—to express the state more intelligibly I should say that an intricate metabolism maintained by another electric appliance continued to take place in the tissue, but the electrical stimulation no longer produced responses. The experiment seemed to be a failure.

Just at that time I received a letter from Professor Kozhevkin, who sent me an article he was publishing the following month in the Science Magazine. His work agreed with the conclusions reached by my artificial brain. Both the Professor and my brain seemed at last to be on the track of a fundamental solution to a profound problem. And my brain had chosen just this moment to go on strike. I was wondering how I could repair it, when I got the idea of making a special apparatus by means of which the brain could "talk", that is to say it could dic-

tate its answers and make any other remarks it wanted to. It does seem a bit terrifying, I know, but I thought that if I gave the brain a well-known man's voice, say the television announcer's, the effect would not be so inhuman. In a few days my brain was able to "talk". What were its first words? They had nothing to do with scientific hypotheses.

"You are neglecting me," it said.

That was a surprise indeed. I had thought that electrical stimulation could take the place of any rewarding impulse. It now became suddenly clear that we still had not mastered affectivity, and that we could not find any substitute for the feelings of security and pleasure man derives from his relations with those near and dear to him; no chemical reaction could supply this. This was the first conclusion to which my experiment had led me. And so I had to have recourse to an old-fashioned method. I began to take care of my invention personally. I moved into the laboratory to be near it, and talked to it night and day. My colleagues could not understand me. Some of them said I must have fallen in love with the television announcer and spent my time enjoying his voice. There were others who thought I'd just gone mad.

But I soon began to understand my "brain" easily, and even took down its answers when the dicta-

phone happened to be out of order. But a fortnight later we had another breakdown. The brain seemed to be getting upset. It kept on shouting one and the same sentence at me, as if it was absolutely furious about something. I was very patient and kept on talking calmly to it for a long time. He ought to be reasonable, with such a brain capacity, such a magnificent brain. I realised then that I was really talking to some kind of a creature, and not just to an isolated set of tissue that functioned. Unconsciously I began imagining a creature with a brain like his.

That was just what he wanted. First the electrical stimulation, and then the constant care—that was not enough. The individual areas of the brain with which he had originally seen, smelt and felt, were anxious to become active; they wanted to have something to do, just like his speculative powers. What he wanted to have once more was a whole organism, with all its senses, and even with its skin.

I should like to emphasise here that it was only after very serious consideration that I decided to go on with the experiment. But there was too much at stake. And my colleagues in the experimental surgery department were only too glad to have the chance to make a human body of their plastics instead of the missing limbs and organs which usually fell to their lot.

I had no idea what his face ought to be like, of course, and so instead of a face we left him a nice arrangement of bandages, so that he looked like a man recovering from a severe accident.

We returned to the laboratory together. He was "happy". He was whistling to himself, a melody that perhaps the poet had known in his lifetime. He stood by the window and looked down at the river flowing near by. It did not occur to him that he ought to start working.

"What a beautiful view," . . . he said. I had never realised it before, because I was always looking into books and never out of the window.

"You may like to know that Professor Smith-Jones . . ." I began tactfully.

"He's miles behind the times," he replied. "He's a fool," and he sat down at the desk. "Book seats for the theatre this evening."

I was rather taken aback. Surely he didn't want to go out with me as well? I inquired about the professor of architecture; He did not like the theatre, it seemed. The poet only went to concerts. We seemed to have given too much importance to Anna Novak's contribution to our invention. By this time, however, many people were following our work with this brain of ours. Especially because it was impossible to follow it. There were learned arguments about whether

the responses given by the brain were nonsensical automatic figures, or whether they were the fruit of original and hitherto unknown thought processes being carried on by a human brain raised to the fourth power. Only further experiment could supply the answer. And so I decided that I would go to the theatre with him after all.

He laughed louder and wept more frequently than anybody else in the audience. I enjoyed the play, too. I so rarely went to the theatre in the normal way. I had so much to do in the laboratory. The trouble was that after the play he wanted to come home with me. I had to explain that I was over fifty and that I had a grown-up daughter whose light-hearted way of life I frequently had to criticise, and that I could on no account take a strange man home with me for the night. I used the word "man" on purpose. Of course that made him sad. And he threatened to stop working, because he said he'd nothing left to work for. That was when I first realised that for his work he needed human inducements, the impulse of competing with Smith-Jones, of loving me, of having a family life.

At first my daughter was afraid she'd have to put up with a monster like Frankenstein, the famous monster of silent screen days, but she soon got to like him quite well. It even seemed at times as though

she got on better with him than with me. She is a funny girl, you see. At first she wanted to work on a lunar station like her father, whom I left soon after our marriage because he had no understanding for my scientific work. Then she wanted to be a dancer, but her hips are too broad for that, in my opinion. Now she is studying Hittite, obviously only so as to avoid studying physics, because she wants to spoil things for me. She's not particularly good at Hittite, while when I was her age I was well-known everywhere. Worst of all, she is expecting a baby by an unknown young man she hasn't even brought home to introduce to me.

My artificial brain seemed to do even less work than my daughter, and in that they certainly had plenty in common. In the course of a day he would write a few lines, and then go for a walk in the park or go bathing in the river. And he kept on explaining to me that I must love my daughter, which is obvious anyway, and that I must be a different person and that work in the laboratory is not a be-all and end-all. The sort of argument you can hear at every street corner nowadays. I didn't need to invent a biological system just to hear that. But he did not reserve this advice for me; he stopped and talked to everybody; the people living in our block of flats began to pass the time of day,

respectfully and at a safe distance.

At this period he was dictating responses which were no longer equations at all; they were symbols such as nobody in the world yet understands. Smith-Jones naturally declared it was a pack of nonsense, disconnected and confused scraps of knowledge from his three previous lives. He published his views in a journal. It was like a bombshell. I was sent for by the head of our research institute, journalists tried to interview me, and my experiment became common knowledge. If it did not succeed I should have lost everything.

The super-brain was not a bit worried. That day he barely scribbled three letters.

"What do you want? What are you after now?" I begged him impatiently, and I would even have been willing to sleep with him had it been technically feasible. "You're really blackmailing us . . ." and I put Smith-Jones's article down in front of him.

"I'm not asking for anything," he replied, "except for you to act according to what I tell you . . ." I could not understand him. How could I fit my behaviour to unintelligible symbols and scribbles I myself had begun to lose faith in? "I'll answer in three days," he said and was silent. He gazed out of the window as though he was trying to concentrate on something. I was watching him by means of a special instrument I had installed in

my own room. He did not write more than two lines the whole night. And except for that he did not move. But he had promised an answer. And so I sent off telegrams to both the professors and informed my superiors. The experiment was drawing to an end.

The next day he did not speak to me at all. He sat in his own room holding his head in his hands and whispering his responses into the dictaphone in a voice that was growing weak. He had gone grey overnight. Can the last phase of knowledge be so exhausting? I did not want to disturb him. The following morning he could no longer recognise me, and by evening his eyes were staring vacantly even at my daughter. I sat by his side all night. His responses were mere hissing sounds by now, and the most delicate dictaphone could not catch them. At three in the morning he "died". At six Professor Smith-Jones arrived. At eight Professor Kozhevkin came. In vain. In time for the funeral.

We had to cremate him, you see. He should have been thrown on the scrap-heap like any other apparatus which is no longer in working order. But in the last few days of his "life" he had made so many friends in the neighbourhood that I could not and would not explain my experiment to every one of them. The Crematorium was packed, and I stood in a corner with the two visiting scientists,

who could not refrain from smiling to themselves. How easy it is to deceive our fellow-men. So they would go to a machine's funeral. They recommended that I should repeat the experiment. My daughter was waiting outside the Crematorium. She congratulated me.

"Can't you see that was his answer? He died. And before that he lived, he lived fully and wisely, feeling nothing but affection for those around him. Is not life itself the finest answer, life which we should never cramp and circumscribe? And is not the greatest wisdom of all death after a life lived to the full?"

She introduced her fiancé to me. I realised why she had not done so before. He worked on the same lunar station as my husband had been on, years ago. He was a nice lad. We all went home together. The whole family. A week earlier I would have turned the two of them out. I don't like these fellows from the Moon. I don't know why. I've never really thought about it. I've spent my whole life concentrating my thoughts on my work, like so many other people. Perhaps my daughter is right after all. In its way the disintegration of my biological system could really be an answer. Yet this same answer was given to us at the very beginning of the experiment by the brain of Mrs. Anna Novak. Perhaps we have really neglected

the art of living too much in recent years. It is an art and not a science. But it calls for the deepest wisdom.

I felt that even a normally in-

telligent mind could grasp this simple fact.

And so I finally gave up experimenting with biological systems.

Through Time and Space With Ferdinand Feghoot: L

It was Ferdinand Feghoot who, in 2839, averted the greatest fraud in all history. The twin worlds of Gyppo and Pigeon Drop had the highest mutation rate ever known. Their inhabitants provided freaks for the galaxy's sideshows, and specialized in revolting "wild man" acts, swallowing live hair-slugs from Lovecraft 14, and biting the heads off wet, wriggling *slurbwinders*. They were notorious for their rigged games and elaborate confidence tricks.

Then they abruptly "reformed". They joined respectable churches, confessed every detail of their past swindles, and impressed everyone with their fervor. Soon ministers were giving them character references; bankers and lawyers were co-signing their notes.

Feghoot remained unconvinced. Though reviled and ridiculed by the popular press, he pushed his campaign for a thorough investigation by the Galactic Intelligence Agency to a successful conclusion, and the results proved how right he was. The Gypponians and Pigeon Droppers had planned to salt their deserts with priceless *gaborium*, to sell mining stock everywhere, and then to evade prosecution by taking advantage of an obscure immunity clause in the Grand Charter.

"Tell me, how off earth did you know it?" asked the President General, as he hung the supreme decoration around Feghoot's neck.

"It was obvious, sir," answered Ferdinand Feghoot. "Beware of geeks baring grifts."

—GRENDALE BRIARTON (*with thanks to W. Robert Gibson*)