

## Physicists on the phone: International science and Soviet dissidents

"*Moskovskaya telefonista?*"

"*Da.*"

It was the only thing Soviet officialdom said yes to in the whole proceeding. Boris Ainbinder, a scientist who recently emigrated from the Soviet Union to Israel, was trying to get the Moscow telephone operator to reconnect a call to the home of Soviet activist Pyotr Yakir in an attempt to contact some dissident scientists. The operator insisted the line didn't answer. How could that be, Ainbinder responded—the group gathered around the telephone in Chicago had just spoken to Yakir. The connection had broken in midsentence. Please try the line again. "Don't tell me how to do my job," the operator responded angrily.

In a tone familiar to those who have had problems with operators of AT&T, Ainbinder asked to speak with her supervisor. But he was dealing with the KGB not AT&T, and he was told that since it was late (after 11:00 p.m.) in Moscow, everybody had gone home.

The scene was the press room for last week's meeting of the American Physical Society and the American Association of Physics Teachers in Chicago's Palmer House. The idea was to contact the Soviet dissidents, especially physicists Mark Ya. Azbel and Aleksander Voronel, by long-distance telephone and let American reporters interview them.

Past experience has shown that a phone call is a way to get uncensored contact with residents of the Soviet Union since it can sometimes catch the KGB off guard. Of course when the KGB finds out that such a call has been made, it yanks out the telephone that received it. But by leap-frogging Moscow from the home of one willing person to another, contact can be maintained. For this attempt Yakir's phone was chosen.

A ruse was played in hopes of getting past the KGB. A call to Moscow must be placed in advance to clear circuits for the appointed time. The appointed time for this call was 1:30 p.m. Chicago time on Tuesday. Early that day the call had been set up with the overseas operator by representatives of the Committee of Concerned Scientists, who are concerned to get the dissidents out of the Soviet Union. In doing so, they gave the operator a false number, a Moscow number they knew was not working. When the operator called back at 1:30 to tell them that, they asked her to try 129-2630, Yakir's real number. The hope was that the call would go through before the KGB's tracking apparatus caught on. The call went through. Yakir answered and responded to a request for Azbel by saying, "Azbel will be later." As the American side tried to get him to explain what he meant, the line went dead. That was when Ainbinder took the phone and tried unsuccessfully for a reconnection.

Apparently the major offense of Azbel and Voronel and two other scientists the Committee of Concerned Scientists

is particularly concerned about, mathematicians Aleksander Luntz and Viktor Brailovsky, was to apply for permission to emigrate to Israel. For that they were kicked out of their jobs. Now the Soviet state seems to be moving toward prosecuting them as parasites under a provision that says those who will not work can be sent to jail. Thus, after firing them from their jobs and making it impossible for them to get others, the Soviet government proposes to proceed against them for being out of work. The committee wants to raise international opinion and pressure in the hope of getting them out before that happens.

While the plight of would-be emigrants is a matter of general humanitarian concern, an incident involving Azbel, Voronel and a third physicist in the same trouble for the same reason, Moshe Gitterman, is of narrower interest to the scientific community. It concerns the integrity of scientific meetings and scientists' access to them.

In August 1973 an international meeting on magnetism was held in Moscow. Azbel, Voronel and Gitterman, who are specialists in magnetism, wanted to attend. In no way could they gain admission as members of the Soviet delegation. An attempt by the Israelis to include them in the Israeli delegation was likewise rebuffed. The conference was held at Moscow State University where the doors were guarded by armed, uniformed men who scrutinized the badges of all who entered. In the end a special informal session was held in Voronel's apartment to give the three excluded ones a chance to read their papers.

A number of members of the conference were incensed by these proceedings and tried to bring up the matter on the floor with little success. One of them, Earl Callen of American University, was so disturbed that he gave a paper at this APS-AAAPT meeting describing what had happened. Attempts to get the International Union of Pure and Applied Physics, one of the sponsors of the Moscow meeting, to intervene with the Soviet authorities likewise failed. IUPAP has passed resolutions demanding freedom of travel for scientists and free access to meetings, but these were interpreted as not referring to travel within one country and of no legal force anyhow. Callen says American and Canadian representatives on IUPAP went along with the Soviet interpretation of the resolutions.

Callen calls for a change in the method of appointing U.S. representatives. They are now appointed by the National Academy of Sciences. Callen regards the NAS as a self-selected elite and calls it "a guru club," unrepresentative of American scientists generally.

Callen also points out that there is some strange politics going on in the United States, a "strange inversion of right and left." "The left has gone and looked," he says, and been dismayed. The right, under "Nixon, the arch-anticommunist of all time" makes trade agreements with Soviet officials. "So you're in business to make a profit," he concedes, "but do you have to sell . . . the United States?"

only 30 joules of energy absorbed in the target. This will permit the gathering of abundant data about the implosion process, which is essential to laser-induced fusion, while physicists are still awaiting development of lasers powerful enough to induce actual fusion. No instabilities have shown up in the implosion measurements, and this too is considered important verification of the theory developed by a group led by Brueckner. □

## Interferon: Promise against serious infections

In 1957 British researchers identified interferon as the body's natural defense against viruses. Scientists throughout the world predicted that by giving or inducing natural production of this protein, they could immunize persons against invading viruses.

But from the beginning, interferon

studies have yielded conflicting results. Preparations of interferon often have been impure, and it has been hard to tell whether interferon or a chemical inducer causes any particular reaction. Nevertheless, more is now known about the actions of interferon in animals and more human interferon is now available for clinical trials. So there is renewed interest in interferon and fresh evidence for its effectiveness.

Last spring Thomas C. Merigan of

the Stanford University School of Medicine and colleagues at Harvard Hospital in Salisbury, England, reported that they were able to protect human volunteers against flu and cold viruses by giving them interferon. Volunteers who served as controls came down with flu or colds (SN: 3/31/73, p. 208). Now Merigan and Stanford co-workers George Jordan and Richard Fried have preliminary results that interferon may provide protection against serious herpes virus infections, specifically against chickenpox and shingles. Merigan reported their results last week at the Gustav Stern Symposium on Perspectives in Virology.

Chickenpox and shingles are usually not serious, but they can be lethal in persons suffering from immunological deficiencies. So Merigan and his colleagues gave a shot of interferon daily for three consecutive days to 17 immunologically deficient patients with severe cases of chickenpox or shingles. The shots produced levels of interferon in their blood that would be effective in tissue culture.

"The most encouraging thing," Merigan says, "is that the patients could tolerate large amounts of interferon in their blood. Each shot they received contained 50 million units of interferon, putting into their blood 20 times the amount of interferon it takes to counter chickenpox or shingles viruses in tissue cultures." Merigan's volunteers who fought off cold and flu viruses received only 14 million units of interferon daily for four consecutive days, by nasal spray.

Merigan and his co-workers are now starting a clinical trial using controls to see whether interferon is indeed effective against critical viral infections. "I see the possibility of interferon being applied to hepatitis, rabies and other severe viral infections," he says.

Merigan credits much of the success he and his colleagues have had with interferon to Kari Cantell of the State Serum Institute in Helsinki, Finland. Cantell has provided them with the human interferon they've used in their clinical trials. Since Finland has one of the few centrally controlled blood banks in the world, Cantell has ready access to trillions of white blood cells, which he stimulates for interferon.

Even though human interferon is now available in bigger supplies than several years ago, it is still prohibitively expensive. The cost of one 50-million-unit injection is several thousand dollars. The key to interferon's clinical success probably lies in the unraveling of its amino-acid structure and in its subsequent synthesis. Scientists working in this direction include Christian B. Anfinsen of the National Institutes of Health, 1972 Nobel laureate in chemistry. □

## Fossils show man walked 3 million years ago

There is not one but a dozen missing links in the story of human evolution, particularly in the chapter concerning the transition from ape to man. Anthropologist D. Carl Johanson of Case Western Reserve University in Cleveland has discovered a skull fragment, shin and thigh bones of a three-million-year-old man in Ethiopia that push the story back an estimated million years.

The bone fragments—femur (lower thigh), proximal tibia (upper shin) and two incomplete proximal femora (upper thigh)—were found within a 10-foot area in the Afar-Awash Valley in Ethiopia in November. Johanson believes the bones belonged to an ape man (hominid) of the genus *Australopithecus* over 25 years old and about 3- to 3½-feet tall. The left temporal skull fragment was found a mile away from the leg-bone site on Dec. 10, only two days before the expedition ended. This fragment belonged to a larger individual.

"We have absolute, concrete evidence that our ancestors walked on two legs over three million years ago," the 30-year-old scientist told a news conference sponsored by the National Science Foundation last week.

The oldest evidence of early man to date comes from a 5½-million-year-old partial skull fragment and tooth found in Kenya. But before the new finds, there was no evidence that these ape men were erect and walkers beyond two million years ago. "So we have extended our knowledge of this particular kind of fossil man well over a million years," says Johanson.

Johanson and two students from cwru were part of an international expedition of French, Ethiopian and American scientists who spent 12 weeks in the Afar-Awash Valley.

Johanson concentrated his efforts in an area known as the Afar Triangle or Afar Depression. The triangle has received extensive attention from geologists with the renewed interest in plate tectonics. Sediments are extensive, extending approximately 150 square kilometers and having a maximum thickness of about 150 meters. The area is dry and parched, but sediment deposits indicate that rivers once flowed in the region and emptied into a lake. The abundance of fossils and the continental forces that raise the various strata make fossil hunting extremely easy for anthropologists.

"The excitement of the area is in terms of the possibility of finding not only associated body parts of beasts . . . but that these parts may be in fact articulate," says Johanson. "We



Cleveland Museum of Natural History  
*Johanson with Ethiopian fossils.*

found a cranium of a crocodile resting right on its mantle which means that the animal died three million years ago there, was covered by sediment and fossilized. This is a situation that exists virtually nowhere else in Africa. And it is going to give us, if the indications are correct, the first possibility anywhere in the world, of finding very closely associated skeletons of early man."

When Johanson first found the shin bone, he thought it was exceedingly small to be attributed to fossil man.

"At first my impression was that it merely represented a very large monkey because we were finding numerous remains of monkeys in this area. But then I continued to survey and found just 10 feet away, a broken bottom end to the thigh bone. When I picked this up and put the two pieces together, it was immediately obvious that it was not a bone of a monkey. We then continued looking and found the two top ends of the thigh bones, unfortunately incomplete, but sufficiently complete to be able to investigate in great detail the muscles that were attached there and that are so important in one of man's primary adaptations—walking on two legs."

From the fossil remains of gazelle and white rhinos, anthropologists believe the Awash Valley was once a grassland bordered by forest. A popular theory concerning the transition from ape to man states that when early man first ventured out on the savannas or the grasslands, he encountered tall grass and began standing on his hind legs to see over the grass, to avoid his predators and to investigate possible food sources.

Johanson hopes to return to Ethiopia this year in late summer. At the moment, all the scientists have returned home, are working on their finds and developing new strategies of attack. □