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Science in Eastern Europe: II

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6. Bucharest

Leaving Budapest in the forenoon of the 28th of June, we arrived at Bucharest early next morning and remained there till late at night on the 7th of July. During our stay we were the guests of the Rumanian Academy of Sciences and the Rumanian Institute for Cultural Relations with Foreign Lands. These two organisations took it upon themselves to make our sojourn in Rumania a most interesting experience. The enthusiasm and cordiality with which we were received and entertained cannot easily be described.

Three days, namely, the 2nd, 3rd and 4th of July were devoted to the preparation and delivery of a course of three lectures on the "Physics of the diamond". The hall of the Academy where the lectures were delivered was filled to capacity on all the three evenings. In giving these lectures, I had the assistance of Dr Gavrila, a young theoretical physicist who spoke and understood English very well. The main points of each lecture were discussed with him and written out in advance and he could therefore translate my lecture as delivered orally in a perfect manner. The results were satisfactory both to myself and to the audience.

A notable recent development in Rumania is an Institute of Atomic Physics which has been built a few miles away from Bucharest and is accommodated in a group of buildings, the two largest of which contain respectively an atomic reactor and a cyclotron with their controls and accessories. As the Director of the Institute, Academician Hulubei, was away in Geneva at the time of my visit, I was shown round the Institute by the members of the staff. The latter includes Academician Titeica who is the leader of an active school of theoretical physics. I also paid a visit to the Institute of General Physics at Bucharest of which Academician Bădărău is the Director. I was shown round the various laboratories in which I found much valuable work in progress in diverse fields and had the pleasure of learning about the details of that work individually from Prof. Bădărău's colleagues. I was also much interested in the arrangements made to give a preparatory course of experimental work in nuclear physics to the University students.

During our stay at Bucharest I had the pleasure of meeting the Prime Minister of Rumania at his office and had a long and interesting conversation with him. The Prime Minister gave me a detailed account of the progress being made by

Rumania in the economic, educational and scientific spheres and expressed with sincerity and emphasis his desire that Rumania should come into much closer relationships with India in various fields of activity for their mutual benefit.

Two days were devoted to a tour by motor from Bucharest to Ploesti up the valley of the river Prahova to the mountains and back. On our way we passed through the region where the famous Rumanian oil wells and the oil refineries are located. The terminus of our tour was at Sinaia, a well known hill resort at which we made a short stay. From the verandahs of our lodge we could see the mountains encompassing Sinaia. We motored to a hotel perched up on the heights and on our way back visited the Peles Castle, formerly a royal residence and now a public museum which has lovely gardens and terraces with beautiful views on every side.

That Rumania has an active scientific life and an intellectual climate favourable to achievement was very evident. A extensive scientific literature exists in the language of the country, merely as a sample of which I may mention a book on the physics of the solid state written by the young physicist Sergiescu and a book on the acoustics of the violin by Professor Bianu, copies of which the authors were good enough to present to me.

We had a wonderful send-off from Bucharest. At the station we were handed two beautifully bound albums containing photographs of our visits respectively to the Institute of Atomic Physics and the Institute of General Physics.

7. Belgrade

Yugoslavia lies on the railway route between Rumania and Italy, and in our travel programme which had been arranged in advance, two weeks had been set apart for a journey through that country with a stop-off at each of its three chief cities, viz., Belgrade, Zagreb and Ljubljana. The holiday season had however already begun and I was under the impression that the time chosen for the visit of Yugoslavia was not a suitable one for making any useful contacts with its scientific men. This anticipation, however, turned out to be false. Nawab Ali Yavar Jung who is the Ambassador of India at Belgrade is an old friend of mine. He welcomed us on arrival and told us that he had taken the initiative in arranging a programme for our stay at Belgrade. This, in the event, proved to be highly interesting and fruitful.

Belgrade is the capital of Serbia and has been the scene of many conflicts in its past history. It is now also the capital of the Federal Republic of Yugoslavia. The city is situated near the confluence of the Sava and the Danube which join here to form a single mighty stream. Standing on the ramparts of the ancient fortress of Belgrade, one sees an impressive panorama over the rivers and the neighbouring city of Zemun. Very appropriately also, in the Citadel of Belgrade have been set up the memorials of the recent conflict in which the partisans under the leadership

of Marshal Tito successfully defended their country against the armies of Hitler.

Professor Milojevič of the Physical Institute of the University of Belgrade had arranged for a lecture by me on the 9th of July following the day of our arrival. Professor Savič took the Chair and I expounded as briefly and as clearly as possible the ideas regarding crystal physics which had emerged from the Bangalore investigations. On each of the three following days (10th, 11th and 12th of July) I visited the Institute of Nuclear Sciences which had been set up by the Federal Government. The Institute is located at Vincha about fifteen kilometres away from Belgrade and the motor road leading to it took us through some lovely countryside, and Vincha itself is most picturesquely situated. I was warmly welcomed at the Institute by Director Popovič who is in charge of the administration and by Professor Savič who is in charge of the scientific activities. Great progress had been made in building up and equipping the Institute and further developments were in full swing. I found many young scientists at work and much activity in the laboratories.

On the 11th of July, I gave a lecture at the Vincha Institute in which I expounded my ideas regarding the structure of diamond and the explanation of its properties. Prof. Savič presided at the lecture and led the discussion which followed it. The rest of my time at the Institute was taken up in visiting its various departments, viewing the equipment which had been set up or was being set up and discussing the investigations in progress with the workers in its laboratories. In the evening of the 12th of July, I visited the Serbian Academy at Belgrade of which Professor Belič and Professor Kasanin are respectively the President and Vice-President. The Mathematical Institute of the Academy which I inspected is an active organisation and has a fine library. The publications of the Institute are regarded with respect in mathematical circles everywhere.

Our hosts of the Institute and the Academy did their very best to give us a happy time. On the afternoon of the 11th of July, there was an excursion to the hill-top of Avala, a few miles out of Belgrade, on which a highly impressive monument to the Unknown Warrior stands. Extensive views are to be seen on all sides from the monument. On Sunday the 13th of July, we were taken on an all-day motor tour through the Serbian landscape. We visited the valley of the Danube and saw several of its beauty-spots.

8. Zagreb

As had been planned earlier, we were at Zagreb for three full days, arriving on Monday evening, the 14th of July, and leaving for Ljubljana on the forenoon of Friday the 18th. The holiday season was in full swing and we travelled in a train which was very crowded, but the special consideration which was given to us by the railway staff saved us from discomfort. We were met at the station by Dr S Asperger and taken to our hotel.

Croatia is one of the several Republics which have federated to form Yugoslavia. It includes a great part of the coast-line of that country from Fiume in the north to Kotor in the south, as also an immense number of islands, great and small, in the Adriatic Sea. Zagreb is the capital of Croatia, and is a large city. The river Sava runs a few miles south of it while immediately to the north of the city are some high hills which help to make Zagreb and its surroundings very picturesque.

Local patriotism runs strong in Yugoslavia, and since a great new Institute of Nuclear Physics is going up at Belgrade, it was only to be expected that Zagreb would not lag behind. Indeed, our visit to Zagreb, brief though it was, owed its great interest to us by reason of that very circumstance. On the rising ground between the city and the mountains a great new Institute had been set up named quite appropriately as the Boscovitch Institute after the great pioneer of an earlier age in the field of atomic physics. The Institute is by no means a duplication of the effort which is building the organization at Belgrade. The scientific ideology animating the Boscovitch Institute is indeed different, embracing a wider range of scientific topics. Nuclear physics was of course represented and indeed showed every sign of being an active field of interest at Zagreb. The fitting up of a laboratory containing a large cyclotron was in an advanced state of progress. Prof. Paić also showed me the equipment that he had set up for investigating the behaviour of atomic nuclei under neutron bombardment. During my visit to the chemical laboratory of the Institute, I was much impressed by the work being done by Dr Asperger on the detection of traces of mercury in the atmosphere by its effect upon the rate of chemical reactions. This is a subject of practical importance, since Yugoslavia is an important producer of mercury from its naturally occurring minerals.

An interesting function at which I was present was the final examination for the Doctor's Degree in Physics of two young aspirants for that distinction. I sat alongside of the Board of three Examiners which consisted of three professors of the Zagreb University. In view of my presence at the examination, the candidates were asked to give the oral presentation of their theses in the English language. That they could do so and very well indeed was not surprising, since the experimental work of one candidate was done at Cambridge in England and by the other at Rochester in USA. The *viva voce* examination which followed the oral presentation of the theses was very searching but the candidates showed up very well. I felt that the system followed at Zagreb of having only internal examiners for the doctorate was an admirable one which was worthy of being followed elsewhere.

Apart from the activities referred to above, our three days at Zagreb were fully occupied. On Tuesday the 15th of July, I spoke on the problems of crystal physics at a colloquium at which Dr Supek and his colleagues in theoretical physics were present. The discussions with him on this and other topics were continued later in the day when he drove us up to a mountain lodge some miles behind Zagreb

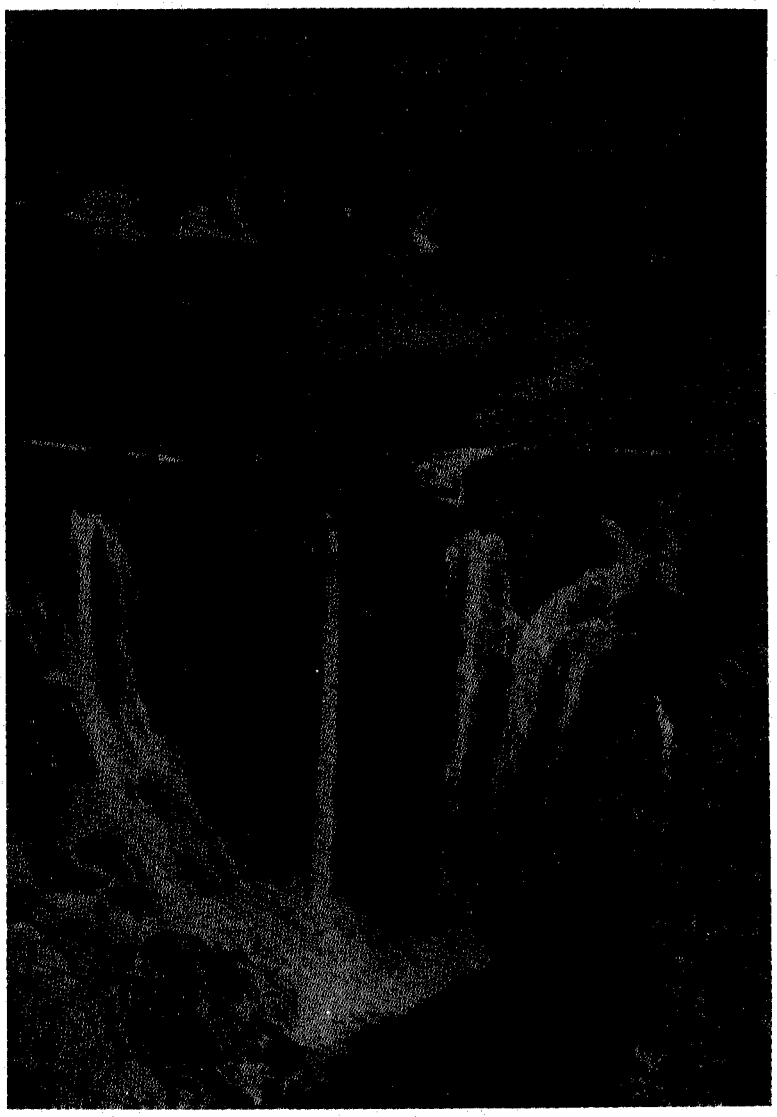

Figure 3. The Plitvice lakes, Yogoslavia.

where we spent a few happy hours wandering through the woods. The next day, Prof. Paič and Mrs Paić took us out on an all-day motor excursion in the course of which we visited the medieval town of Karlovie and thence proceeded to the famous national park containing the Plitvice lakes. Here we spent the rest of the day exploring the lakes, returning to Zagreb late in the evening, tired but happy.

To describe the Plitvice lakes adequately and convey an impression of their transcendental beauty would need a whole article to itself. We can only reproduce here a photograph of a very small part of the region including the waterfalls characteristic of the area.

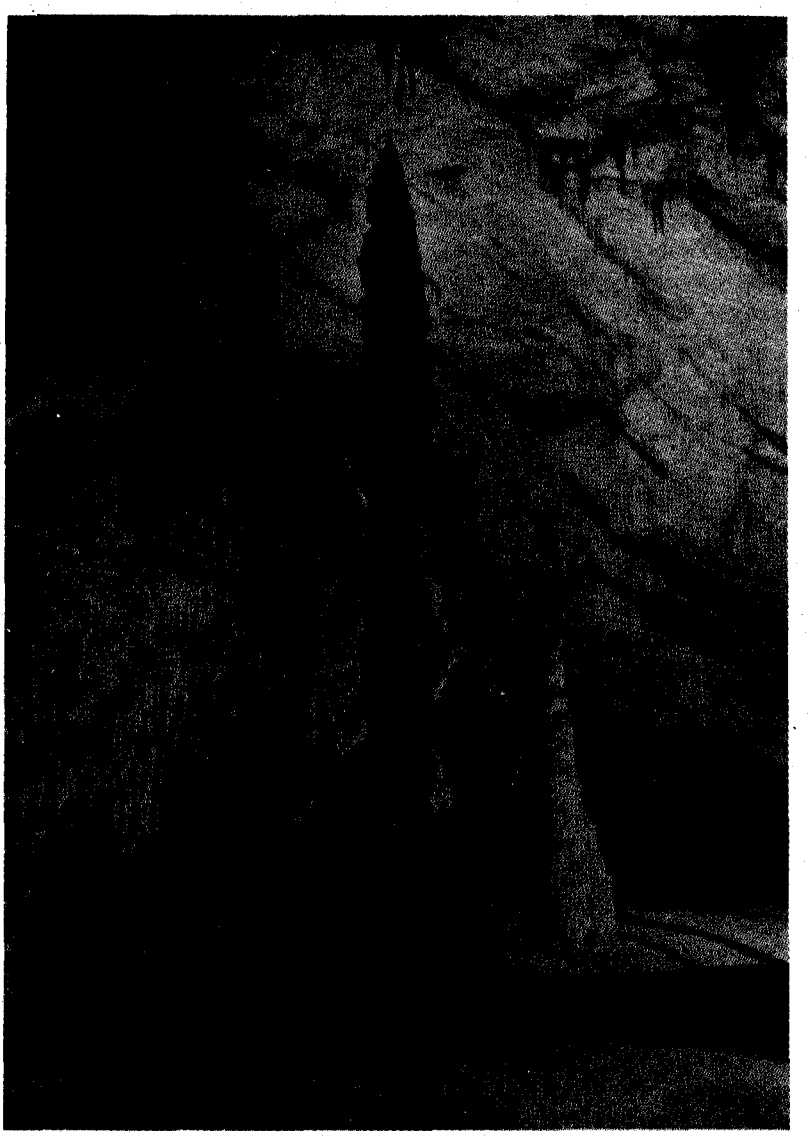

Figure 4. Near the entrance to Posthumia caves.

On the third day, the 17th of July, we were entertained by Prof. Paić and Mrs Paić at their home. They bid us an affectionate farewell next morning at the station when we left for Ljubljana.

9. The rest of the tour

My scientific activities ceased when we left Zagreb. But a brief reference to the later parts of the tour may be of some interest to the readers of *Current Science*. The railway journey from Zagreb to Ljubljana is not a long one. It took us through the beautiful valleys and gorges which the river Sava has made for itself in flowing through Slovenia. Ljubljana itself is a charming town with a medieval castle on a hill right at its centre and a great city park extending into the hills. The day after our arrival, we drove up to the celebrated limestone caves at Posthumia which lies halfway between Ljubljana and Trieste. These caves run for several miles underground, and indeed one has to make a good part of the journey within them by electric trolley. The rest of the journey on foot through the cavernous interior takes us through a region of which the magnificence and fantastic

Figure 5. Lake Bled and its island.

character beggars all description. The photograph reproduced shows a region near the entrance to the caves. On Sunday, we undertook a motor tour to the region of the Julian Alps including the two lakes, Bled and Bohini which lie in that area. Lake Bled and its environs appear comparatively sophisticated. The picture reproduced shows the church on an island in the lake and the Julian Alps beyond. Lake Bohini which is much further west is not far from Triklav, the highest peak of the Julian Alps. It lies right at the foot of the mountains and has a sombre beauty of its own.

Leaving Ljubljana on the morning of the 21st, we travelled via Trieste and the coast of the Adriatic to Italy and Venice reaching the latter city the same afternoon. We spent the next day at Venice visiting its palaces, the Lido and the lagoons. The next day, again, we toured through Venetia by motor, viewing its many beautiful villas with their Palladian architecture. Crossing the river Brenta by its celebrated wooden bridge, we went as far as Asolo before finding our way back to the Grand Canal of Venice and our hotel.

The evening of the 24th of July found us back again at Innsbruck where we remained three days. Innsbruck is a convenient centre for visiting the surrounding regions in Austria, Italy and Germany. The opportunities thus open to us were fully utilised before we left finally to catch our steamer at Genoa.