

Reminiscences of a reader and listener

The book "An Introduction to Mathematical Analysis" (see Ref. VI), written by Professor Jan Mikusiński during his Wrocław period, is one of the best of this type. It begins with the rules governing operations on numbers. It ends with the words: "...however, so far nobody has been able to prove this". These words concern the conjecture on the irrationality of the Euler constant. The book stands out due to the very elegant and short proofs. Trigonometrical functions are introduced by means of power series and the number π appears here formally as a period. In the chapter devoted to the integral (the most interesting in the book) this π is identified with the π which is known from geometry.

The logic of reasoning in Professor Mikusiński's works is of the highest quality. But this is the logic of a mathematician. He disliked over-generalization, he used to express theorems in a classical, even an old-fashioned form. He was fully tolerant of illogical notations which have a good tradition. Thus he accepted writing $f(x)$ for the function as well as for its value at x . The question of what is, in fact, this mysterious x in the symbol $f(x)$, was always present in his works. He regarded it simply as a variable. Although he accepted the notion of function as a set of ordered pairs, in each passage where he admitted such treatment, he used to add that this treatment was modern. One may infer from a passage in his "Operational Calculus" (see Ref. I, p. 343) that he regarded $\tan x$ to be discontinuous at $\pi/2$. In his lectures he introduced real numbers axiomatically with the emphasis rather on the axiom of Archimedes than on that of continuity.

Professor Mikusiński disliked topology and the language of the theory of sets. None the less, he is the author of a proof in which the Zorn lemma is derived directly from the axiom of choice, while omitting the theory of well-ordering (see Ref. 101). It should be noted here that such proofs were presented independently by many authors but only few of them were aware at the moment of publication that the first original proof of the well ordering principle due to Zermelo was based on a similar idea. No wonder that in Mikusiński's proof well-ordered sets appeared. As a defense a comment was added, that in fact the well ordered sets are not present, since they appeared in the proof under the assumption to the contrary.

The author of these comments knows only little about the mathematical youth of Professor Mikusiński. He said once that before the war the well known Polish lover of mathematics Szczepan Jeleński, author of "Lilavati" and "Following in the Steps of Pythagoras", recommended him to conduct the mathematical recreations section in a journal. The Mikusiński puzzle blocks date from this period. They consist of 7 blocks made from the 27 equal cubes found as the result of dividing a given cube. There is a common opinion that a mathematician is able to reconstruct the cube from a dispersed set of blocks faster than a non-mathematician. However, those who were in the secret knew that Mrs. Sierpińska was faster than her famous husband. The time spent by Professor Mikusiński in Wrocław in the fifties favored this kind of creativity among mathematicians.

Let us mention only the name of Hugo Steinhaus who worked there at this time on the second edition of his "Mathematical Snapshot". The name of Mikusiński is quoted in this book three times. Professor Mikusiński was then working on his musical scale. At the public lecture as well as students there were present a young lady, a musician, and Hugo Steinhaus, a great admirer of Mikusiński's style in mathematics. The content of the lecture was later published under the title "The mathematics of the musical scale" in "Problemy", a Polish scientific journal. During lectures on operational calculus the auditorium was crowded. The staff of the faculty of theoretical physics was always present in full force. The excellent presentation attracted mathematicians, even if their interests differed widely from the subject.

This Wrocław period in the fifties, so fruitful for the mathematical community had, however, its reverse side. Fortunately, Professor Mikusiński never had to take the position of dean or other administrative post. But nobody was entirely free from such duties. A tribute to so called social work was a common trip with the author of these words, by a train, to Legnica for a meeting with school pupils at which the student and the professor gave a talk on mathematics and mathematical studies. The officials were satisfied and also mathematically the trip was successful. In those years mathematics was much safer than other scientific disciplines. It was possible to separate mathematics from other aspects of life.

Once, in a talk, a biting comment was made about a mathematician who was the author of only one theorem. Listening to that comment, Professor Mikusiński observed that a mathematician having two ideas in his life should be regarded as a good one. After a while he added with a smile: "I have had three true mathematical ideas in my life".

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