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Tibor Gallai has turned 70 this year. This issue of our Journal is dedicated to him.

In the early thirties, amidst the increasingly hostile atmosphere of Hungarian Fascism, a group of enthusiastic students met at frequent occasions for open-air mathematics seminars in the City Park of Budapest. The group included Paul Erdős, Tibor Gallai (then Grünwald), Esther Klein, George Szekeres, Paul Turán and others. Some of them became interested in the graph theory course of Dénes Kőnig which had a profound effect on Gallai's mathematical interests.

He helped a great deal with König's classic graph theory monograph which mentions some of Gallai's early results and incorporates many further ideas and remarks of his.

In those days, and for a long time after, graph theory was a collection of isolated problems and results concerning graphs. Some of these results have been forgotten since then, while others have developed into major branches of modern combinatorics. Many of the results and ideas of Gallai have since proved fundamental, and his insights have contributed significantly to the rapid development of combinatorics and mathematical programming we have witnessed in recent years. He was among the first to emphasize the importance of min-max theorems, to apply linear programming duality in the proof of combinatorial min-max theorems, to investigate regular chain-groups, critical graphs, perfect graphs, and to raise the idea that hypergraphs could and should be studied as a generalization of graphs.

Gallai is an exceptionally modest person and is not given to making frequent public appearances or attending conferences. Consequently, his ideas, initiatives, and concepts have become known both in Hungary and abroad mainly through the work of his students, many of whom are editors of this Journal. His influence on combinatorics has thus been far greater than can be judged only from his printed work.

One of his major fields of research in graph theory has been matchings. Besides two simple but fundamental equations known as "Gallai's identities", he proved a good characterization of the existence of a perfect matching in regular graphs (before Tutte's solution of the matching problem). He reacted to Tutte's discovery by giving a new, simple proof of the theorem. (This proof has subsequently been rediscovered by several authors.) Gallai proved a fundamental theorem describing the

structure of maximum matchings in graphs, and has studied several extensions of the matching problem, such as packing paths, complete subgraphs, etc. Many of these results served to motivate extensive research on similar topics. The author of this foreword enjoyed the privilege of writing a thesis in matching theory, under professor Gallai's guidance. Even today he frequently returns to the ideas and problems that Tibor Gallai suggested during that period.

As an example of a result of Gallai by which he initiated a large area of research, we mention his theorem that if every odd cycle of a graph is triangulated by chords, then the graph is perfect. This result was one of the first general sufficient conditions for perfectness. In another paper, he studied comparability graphs, perhaps the most important class of perfect graphs. This interest in perfect graphs and min-max theorems lead him to Helly-type geometrical problems. He proved that interval graphs are perfect and derived various higher-dimensional extensions.

Gallai has important results in almost every classical topic in graph theory: chromatic numbers, critical graphs, extremal graphs, embeddings on surfaces, etc. Although he has always demonstrated sound judgement on the depth and signifi-cance of other researchers' contributions in graph theory, he has often underestimated the merits of his own results. Thus he never submitted for publication his proof of the long-standing conjecture of Sylvester that for every finite non-collinear set of points, there is a line passing through exactly two of them. Gallai proved a nice graph-partitioning result, for which a more elementary proof was later found by Pósa. Each tried to convince the other to write a paper about this theorem, but it remained unpublished. The result was later rediscovered by Chen who correctly attributed it to Gallai. Perhaps it is modesty that made him supercritical of these excellent results.

I have learned of Gallai's modesty and admirable scientific ethics from my own personal experience. When I wrote my first paper, he helped me with the wording, style, and arrangement of results. In the end, he rewrote every word in the paper at least twice. Even then, he refused to allow me to acknowledge his help in writing the paper.

May this brief introduction serve as an expression of my appreciation to Tibor Gallai for the many ways in which he has served as a source of guidance and inspiration.

László Lovász

Publications of Tibor Gallai

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3. On polynomials with real roots (in Hungarian), *Mat. és Fiz. Lapok* **46** (1939) 31—57.
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5. On factorization of graphs, *Acta Math. Acad. Sci Hung.* **1** (1950) 133—153.
6. Maximum-minimum theorems concerning graphs I (in Hungarian), *MTA Mat. és Fiz. Oszt. Közl.* **7** (1957) 305—338.
7. Maximum-minimum theorems concerning graphs II (in Hungarian), *MTA Mat. és Fiz. Oszt. Közl.* **8** (1958) 1—40.
8. Maximum-minimum Sätze über Graphen, *Acta Math. Acad. Sci. Hung.* **9** (1958) 395—434.
9. Über reguläre Kettengruppen, *Acta Math. Acad. Sci. Hung.* **10** (1959) 227—240.

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12. Verallgemeinerung eines graphentheoretischen Satzes von Rédei, *Acta Sci. Math. Szeged* **21** (1960) 181—186 (with A. N. Milgram).
13. Graphs with prescribed degrees of vertices (in Hungarian), *Matematikai Lapok* **11** (1960) 264—274 (with P. Erdős).
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18. Kritische Graphen I, *MTA Mat. Kut. Int. Közl.* **8A** (1963) 165—192.
19. Kritische Graphen II, *MTA Mat. Kut. Int. Közl.* **8A** (1963) 373—395.
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