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Erdős, Paul; Méir, A.; Sós, V.T.; Turán, P.
On some applications of graph theory. II. (In English)
Stud. Pure Math., Papers presented to Richard Rado on the Occasion of his sixtyfifth Birthday, 89-99 (1971).

[For the entire collection see Zbl 214.00204.]
Using combinatorial methods the authors prove (among others) the following theorem: Let there be given n points in the plane $P_1, \ldots, P_n$ so that the maximal area of all triangles (P_i, P_j, P_l) is 1. Then at least $\frac{1}{7}\binom{n}{3}$ of these triangles have an area $\leq \frac{\sqrt{5}-1}{2}$. The authors conjectured and B. Bollobás proved that if $n = 4m$ there is an absolute constant c so that at most $4m^3$ of the triangles can have area $> 1 - c$. $4m^3$ is best possible, but the best value of c is not known. They also show that if $n = 5$ at least one of the triangles have area $\leq \frac{\sqrt{5}-1}{2}$. (The regular pentagon P_1, P_2, P_3, P_4, P_5, area (P_1, P_3, P_4) is 1 shows that $\frac{\sqrt{5}-1}{2}$ is best possible). Many unsolved problems remain.

Classification:
52B05 Combinatorial properties of convex sets
05C99 Graph theory