ANNOUNCEMENTS

Let q_n be the nth squarefree number. Improving the previous results (for a detailed history of the problem see M. FILASETA and O. TRIFONOV, *On gaps between squarefree numbers,* Analytic Number Theory, Proceedings of a Conference in Honour of PAUL T. BATEMAN (progress in Mathematics vol. 85), edited by BERNDT, DIAMOND, HALBERSTAM and HILDEBRAND, BOSTON (1990), 235-253) by "leaps and bounds" MICHAEL FILASETA (of the University of South Carolina) and OGNIAN TRIFONOV (of the Bulgarian Academy of Sciences) have proved in a joint paper (to appear in J. London Math. Soc.) that $q_{n+1} - q_n \ll q_n^{\frac{1}{5}} log\ q_n$. More precisely they have proved that for all $x \geq x_0$ the interval $(x, x+h)$ where $h = C_\varepsilon x^{\frac{1}{5}} log\ x$ (and C_ε is a large positive constant depending on an arbitrary ε with $0 < \varepsilon < 1$) contains at least $\left(1 - \sum_p p^{-2} - \varepsilon\right) h > \frac{1}{3}h$ squarefree numbers. (They have also proved a similar result for k-free integers the exponent $\frac{1}{5}$ being replaced by $\frac{1}{2k+1}$ provided C_ε is replaced by $C_\varepsilon(k)$). Moreover following the ideas of their joint work mentioned just now M. FILASETA has proved that

$$\sum_{\frac{x}{2} \leq q_{n+1} \leq x} (q_{n+1} - q_n)^\alpha \sim B(\alpha)x$$

where α is any constant $< \frac{29}{9}$. (Earlier records are $\alpha = 2$ due to P. ERDŐS the originator of the problem and $\alpha = 3$ due to C. HOOLEY, F.R.S.). For these works M. FILASETA and O. TRIFONOV have been awarded the DISTINGUISHED AWARD of the HARDY-RAMANUJAN SOCIETY. The award \$40 to each of them is meant for the purchase of a volume of the collected works of any of the mathematicians like S. RAMANUJAN, G.H. HARDY, J.E. LITTLEWOOD, I.M. VINOGRADOV, H. DAVENPORT, P. TURÁN and Yu. V. LINNIK. The magnitude of the award is not important. The award is an indication of the respect of the Society to the work of the authors.