

Acknowledgements

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C R Pranesachar , Jayant Rao, R Srinivasan and B J Venkatachala.

Errata

Resonance, Vol.2, No.3, March 1997

Page 88: Line 8, first paragraph in the text ...which began a thousand years... should read ...which began a million years...

(Thanks to Mr S Srinivas, reader)

Resonance, Vol.2, No.5, May 1997

Page 76: Line 6 in the text ...in these m trials. should read ...in these n trials.

Page 78: Last line in the text $\sum_{h=1}^{\infty} (an+b) x^h$ should read

$$\left| \sum_{h=1}^{\infty} (an+b) x^h \right|$$

Page 78: A comment on The Circle Method in the box.

The function $f(z)$ is analytic in $|z| < 1$ and it does not exist anywhere in $|z| \geq 1$. (So the terminology poles of $f(z)$ is not correct). We have to make r a suitable function of n but still less than 1. Then decompose this circle into small bits in a particular way and obtain asymptotics of each bit. The cumulative effect of adding all these asymptotics will give the Hardy-Ramanujan formula for partitions. Actually Ramanujan in his first letter (this letter was written from Madras Port Trust) to Hardy mentions (see equation 1.14 of *Twelve Lectures*), that the integer $q(n)$ defined by

$$\left(\sum_{n \in \mathbb{N}} (x^n)^{n^2} \right)^{-1} \approx \sum_{n \in \mathbb{N}} q(n) x^n$$

(note that LHS is the product $\prod_{h=1}^{\infty} \{(1 - x^h)(1 - x^{2h-1})\}^{-1}$) is the integer nearest to

$$\frac{1}{2} \frac{d}{dn} \left(\frac{\sinh(\frac{1}{2}\sqrt{n})}{\sqrt{n}} \right).$$

When questioned about this he wrote in a letter that it is "not the integer nearest to but this main term plus..." (Compare this main term with the first term of the Hardy-Ramanujan-Rademacher formula for $p(n)$).



Page 79: On Waring's Problem

The omission of the name S S Pillai (Siva Sankaranarayana Pillai in connection with Waring's problem is very serious. In a series of papers, Pillai proved that if $k \geq 6$ and further if $(3^k + 1)/(2^k - 1) [1.5^k] + 1$ then Waring's conjecture is correct for that k . Around the same time (but a little later) L E Dickson proved this with $k \geq 7$ and $(3^k + 1)/(2^k - 1) [1.5^k] + 1$. The inequality $(3^k + 1)/(2^k - 1) [1.5^k] + 1$ was proved for all integers exceeding a certain constants C (same as in para on Waring's problem) by K Mahler. The history of this discovery is very well explained in G H Hardy and E M Wright, *Introduction to the Theory of Numbers* (see notes at the end of the chapter XXI). For another treasure house of information regarding priority of Pillai's work see K Chandrasekharan, S S Pillai (obituary), *J. Indian Math. Soc.*, Vol. 15 pp. 1–10, 1951. Regarding Pillai's achievements I mention the following: when I was in the Institute for Advanced Studies, Princeton, USA, during 1970–71 I noticed in the Institute Library a book by G H Hardy where he places Pillai as the greatest Indian mathematician after Srinivasa Ramanujan. Waring's conjecture was proved for $k = 5$ by Chen-Jing-Run (around 1970) and for $k = 4$ by R Balasubramanian, J-M Deshouillers and F Dress in 1989. Cases $k = 2$ and 3 were disposed off (by simpler methods) by Lagrange and Wiferich respectively. About Pillai I have the following comment: Once I was talking to a responsible Indian specialist dealing with History of Mathematics. I was very surprised when I came to know that he had not heard of Pillai at all. I can account for it as follows. Pillai was very unassuming; he was a member of the Indian Mathematical Society alright; but he was not a fellow of any of the academies and he had no publicity what-so-ever amongst mathematicians who had not looked at the book by G H Hardy and E M Wright mentioned earlier.



Information and Announcements

National Conference on Energy Crisis and Environment



The Loyola Institute of Frontier Energy (LIFE), which is an inter-disciplinary research facility at Loyola College, Chennai, had organised a National Conference on Energy Crisis and Environment on March 7 and 8, 1997. The focus was on Non-Conventional Energy, Environmental Energetics, Environmental Bio-technology, Environmental Engineering and other such topics.

LIFE is planning to start a research journal which will promote interdisciplinary research activities and is looking forward to collaborative research with different agencies working on non-conventional and eco-friendly energy conversion.

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Books Received

*The Eighth Day of Creation, Makers
of the Revolution in Biology*

Horace Freeland Judson

Penguin Books

1979, E 8.00

*Biodiversity Manual
Manual+Classroom Kit*

Centre for Environment Education

OUP & CEE

1996. Rs.60 & Rs.134

Water, An Unusual Substance

R Somasundaram

604, 68th Cross, K S Ly.I.

Bangalore 560 078

1994.

Conducting Polymers

Francis P Xavier Sj. and John

Pragasam Sj.

Loyola College Publications

1996.

Physical Chemistry

G K Vemulapalli

Prentice-Hall of India

1993, Rs.295.

Algebra - Vol.1: Groups

L S Luthar and I B S Passi

Narosa Publishing

1996.

