

■ 科教資料服務專欄 ■

歐美主要科學教育期刊介紹(二)

本刊編輯室

(4) Science Education

本期刊已有六十餘年歷史，每年發刊五期（即元月、四月、六月、七月、十月），每年當中會有一篇年度性的研究摘要報導，如今年的第三期即是由1973年至1983年科學教育研究的摘覽。本期刊提供各種科教看法及研究的發表，對於科學教育工作者而言是一很有用的資料。每一期包括下列內容：

- 一般性文章；
- 科學教師專欄（該專欄是由科學教師教育協會，Association for the Education of Teachers in Science，所贊助）；
- 學習上有關學習心理學的文章；
- 國際性的科學教育報導，報導不同國家科學教育的狀況；
- 論壇及時事，提供各種看法及評論的發表。

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(5) School Science and Mathematics

本期刊是屬於美國學校科學及數學協會 (the School Science and Mathematics Association) 的出版物，每年八月至五月共計十期。該協會藉著資料出版、會議以及學會等活動致力於：

- 強調科學、數學與學校所有課程及社會的相互關係；
- 發掘科學及數學教育上的一般問題，進行研討，並提供研究成果；
- 介紹並評估數學及科學教育上的看法，並作為調整該協會目標的依據；
- 介紹並評估數學及科學新課程及新教學法的發展；
- 藉每年的在職教師研習會以增進教師教學的能力；
- 介紹目前以及將來的趨勢及改進方向。

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◎古中國科學管窺◎

縱談九章算術(二)

古中國數學對圓以及球體的計算成就極高，「九章算術」雖說明圓周率的計算為「三」，但此點並不足以採信以泛論漢代僅知止於此一比數，當時已知圓周之長係由其內接、外接正六角形的邊長換算而得，但為計算方便乃取其整數之三。圓周率之研究就史籍可考者以三國時代魏（公元二二〇—）之劉徽為最優績的人物，著有「九章算術」註釋——西曆二六三年，及釋述測量術之「海島算經」。

劉徽以內接、外接正六角形的推衍，順次二倍其邊數，累積至「一九二」邊的正多角形，而得圓周率「 π 」之值應在 $3,14 \frac{64}{625} < \pi < 3,14 \frac{169}{625}$ 之間，但其常用計算例亦僅用 $3,14$ ，可知僅為實際上取其便利而已。

五世紀南宋天文學者祖冲之，又以同法求得圓周率的二個近似值：

$$\text{約率} = \frac{22}{7} \quad , \quad \text{密率} = \frac{355}{113}$$

後者『密率』值的正確度，歐洲數學家於十六世紀時始經求得，且此種精密數值仍為今日所沿用！

（本刊資料）