Hua Loo-Keng

The final plenary address at ICME IV was given by Hua Loo-Keng, Vice President of Academia Sinica and the dominant mathematics figure in the People's Republic of China. Hua is best known in the West for important work in the theory of numbers—the archetype of pure mathematics—and in the East for work in popularizing applications of mathematics among the peasants. Although Hua spent some years in the United States after the end of WW II, he returned to China in order to apply mathematics to help raise the standard of living of the Chinese people, "because I came from the poorer class myself." In the last 20 years he has travelled to 23 of China's 30 provinces, lecturing to millions of factory workers and farmers on ways in which simple mathematics can make their work more productive.

"Specialists or experts and factory workers do not often share a common language. My experiences have shown me that in order to achieve a common language, these two groups must look for their common need.

"It has been my consistent aim to present the users with the most efficient techniques. Towards this end, my experiences have shown me that a deep understanding of the theory behind each technique is an absolute prerequisite, lest one might be completely misled."

Hua discussed several examples of how mathematics can help workers solve practical problems:

-- finding the surface area of a mountainous region from a contour map;
-- finding gear ratios (within suitable mechanical
limits) to provide a speed as close as possible to a specified target;
-- estimating the surface area of plant leaves in experimental agricultural plots;
-- finding the optimum level of a process that varies continuously, by performing successive experiments at different levels, but as few of them as possible.

Each of these arose as practical problems in Chinese factories and industries, and each requires modestly sophisticated "pure" mathematics for its solution.

Despite Hua's efforts to focus mathematics on direct needs of Chinese workers, he did not fare well during the Cultural Revolution, a period he described as "really disastrous." "Pure mathematics was attacked bitterly, and even applied mathematics failed to prosper." According to Hua, The Gang of Four, leaders of the Cultural Revolution, were interested "less in production than in power." They in turn attacked Hua's missionary efforts in the provinces as "sightseeing." But Hua survived, protected by Chou En-Lai who, when