expertise, since the international chains came up only during the past five years by massive transfers of foreign technology. Ancient equipment now lies side-by-side with the most recent acquisitions in laboratories, thanks to foreign generosity. Given the lack of adequate infrastructure for public utilities, ordnance factories had to manufacture simple appliances such as washing machines and fans to give at least a taste of comfort to less than 6 per cent of the population.

The manufacture of high-technology items such as computers and nuclear power plants still awaits adequate agreements with foreign collaborators, whereas they are taken for granted in India.

In order to replace the Soviet Union as the bastion of world communism, Mao spent enough of the gross national product to create one of the largest but most backward armies in the world. Whereas the Chinese military is struggling to modernize 30-year-old Soviet models, some of the latest versions are manufactured in India, even though defence spending under Nehru was low enough to account for India's reversals in border conflicts.

China has long replaced India as a model for developing countries in western thinking, given all its anti-Soviet rhetoric, and its close defence and economic ties with the United States.

Unfortunately, democratic institutions in India provide enough dissent to verge on myth and propaganda. You will nowhere experience this sense of freedom and individual dignity, supposed to be the essence of western values, in a China bent upon change along occidental lines.

M. K. AGARWAL

Laboratoire de
Physio-Hormono-Réceptérologie,
(Université de Pierre et Marie Curie),
15 Rue de l'École de Médecine,
75270 Paris Cedex 06, France

SIR—N.H. Antia's letter criticizing India's scientific progress (*Nature* **331**, 384; 1988) is unduly harsh and emotional. If the "capitalist West" has a "morbid fear of communism", then Antia's letter reveals a distorted view of India and adoration for so-called communism. Many of the problems of the poor in India are due to the increasing population, which has nearly doubled since independence, and rises more rapidly in economically lower strata of society. China has been able to arrest the sharp rise in population at gunpoint. In China, it is not the individuals who decide how many children they should have but the state.

India's recent history shows that the suppression of freedom by Mrs Gandhi pushed her out of office. The result of an election does not depend just on the votes of the 'privileged' but on those of the masses, which shows how important freedom is for an average Indian. It would have been shameful for India to take the path of China in order to make more rapid scientific, technological and material progress and to pay the price not only with the suppression of freedom of expression and movement, but also by sacrificing the most vibrant and oldest surviving traditions in the world.

Indian scientists and doctors going abroad speak for India's great scientific and medical awareness and competence in global participation in those two fields. The rural population moving to urban areas and living there in bad conditions is a transitional phenomenon of any industrial revolution, as history shows. "Freedom for a few only" are the words used by communists or latent communists even in the affluent West.

Antia should take a balanced view of the problem and take note of the price China has paid in terms of its culture and tradition as well as human lives and suppression.

It is better for us, as scientists, to take a more positive view in order to cure the evils of Indian society rather than condemning its achievements in science and technology. Those who condemn are also the first to be outraged at the suppression of any freedom. It is easier to criticize and condemn a system when one is allowed to do so. If such people were forbidden to travel from Bombay to Poona without the permission of the authorities, they would realize the value of freedom.

V. VERMA

I. Physiologisches Institut der
Universität des Saarlandes,
D-6650 Homburg/Saar, FRG

Unjust Congress

SIR—We were distressed by your report (*Nature* **332**, 670; 1988) on the recent congressional hearings regarding fraud in science. Your article merely repeated the various allegations made at the hearings by Drs Margot O'Toole, Charles Maplethorpe, Ned Feder and Mr Walter Stewart regarding the paper by Weaver *et al.* that appeared in *Cell*.

As the three scientists who, on O'Toole's request, reviewed the data on which the *Cell* article was based, we feel that other views should have been aired, not just the charges. Your failure to do this perpetuates the injustice generated by hearings in which none of the scientists who performed the relevant experiments or participated in the reviews was asked to testify. The result is that a one-sided version of events has been put before the public.

O'Toole initially turned to us as friends to seek our help and judgement on what to her seemed evidence of fraud involving the article in *Cell*. Her accusations were not based on her own work at Massachusetts Institute of Technology (MIT), but on some notebook data that she had come across by chance. After reviewing the data and consulting the involved parties, we unanimously concluded that there was (1) no sign of fraud; (2) no evidence of misrepresentation; (3) no error that undermined the article's basic conclusion. Contrary to O'Toole's statement at the hearings, we did not concede that her criticism was sound.

It was suggested at the hearings that the whistle-blowers in this case have sacrificed their careers by questioning the science of senior investigators. To our knowledge, nothing was done to impede O'Toole in making an official complaint to MIT or *Cell*. On the contrary, she testified that she was encouraged to ask for an official inquiry but chose not to do so. We are not aware of steps that she has taken to continue her career, nor have we, or anyone to our knowledge, made any attempt to block her in this endeavour. Furthermore, the other person who raised charges of fraud, Dr Charles Maplethorpe, is still in science.

Up to the present, the scientific issues have not been put before the public. We thus welcome the independent scientific investigation being organized by the National Institutes of Health. But a picture depicting the authors of the *Cell* article as guilty has been created, and we fear that no matter what results from the official inquiry, an after-image will remain.

It has always been our belief that the most important test of a scientific claim is independent experimental verification, not judicial review. We hope that the editors and readers of *Nature* share this view.

HENRY H. WORTIS
BRIGITTE T. HUBER
Department of Pathology,
Tufts University School of Medicine,
136 Harrison Avenue,
Boston, Massachusetts 02111, USA
ROBERT T. WOODLAND
Department of Molecular Genetics
& Microbiology,
University of Massachusetts
Medical School,
55 Lake Drive North,
Worcester, Massachusetts 01605, USA

Life begins at . . .

SIR—In their paper on human gene expression[1], Braude *et al.* use the term "pre-embryo", though obviously with a certain reserve as they were careful to reference the source[2]. The term itself is not an objective, well-defined scientific descriptive, but in its origins and application it is a mere administrative device to obviate the legal and ethical considerations limiting experiment on human entities at more advanced stages of development, however far that ulterior motive may be from the intentions of the authors.