

In person

Activism with feeling

The top-rank mathematician-physicist who led the move to make the British Association more relevant to present-day society, Professor Felix Pirani, interviewed by Dr Gerald Wick



Each day that Professor Felix Pirani travels from his home in Blackheath to King's College in London, he passes a large brickwall which is painted with the inscription: "Be cool—but care". This slogan could almost pass as a description of the man. Anyone who has met Professor Pirani knows that he is a compassionate, genial man concerned with the present plight of his fellow beings and of our social systems. Furthermore, he displays an equanimity which is not characteristic of those who publicly challenge the "establishment".

Pirani first gained national attention last September when he organised an activist wing of the British Society for Social Responsibility in Science (BSSRS) with the intention of "bringing the British Association into the twentieth century". The activists attended the BA's annual meeting in Durham with the hope of raising such issues as pollution, military research and education, which they felt would not receive adequate attention. Pirani and his associates wanted to bring out the social and political aspects of science and the responsibilities of scientists. Toward this end they had some success (see "Changing of the guard?" by Dr Gerald L. Wick, *New Scientist*, vol 47, p 532). Pirani believes that many people are deluded by the claims that science alone can find the solution to the world's problems. According to his view, the type of science pursued and the uses to which it is put are inextricably bound up in the political system. Politicians and others at the top of the power structure direct the expenditure of research funds and in effect decide the direction of scientific and technological progress. Thus society must be altered in order to stop the perversion of

science. This concept—which is anathema to those many scientists who believe that scientific truth is independent of social values—is quite clear to Pirani. He believes that scientists, and all other citizens for that matter, need to be aware of the implications of their work and of the social and political forces which shape it. He envisages one of the roles of the BSSRS as alerting scientists to this matter. Furthermore, he states that it is the duty of a scientist to inform the public of the general nature of his work and of any harmful uses to which it may be put.

Professor Pirani is not a newcomer to the politics of science. He had always been concerned, but his intense involvement was sparked off during an academic visit in 1959 to the University of North Carolina. As the state of North Carolina is south of the Mason-Dixon line, it was on the confederate side during the American Civil War and thus fought for slavery. "For the first time the black problem hit me in the face", says Pirani. On returning to England, he became active in CND and in the Left Scientists' Group. He attended the special seminars of Lord Blackett and Michael Howard on strategic weapons and gave scientific advice to those groups concerned about the arms race. Later, through Blackett's influence, Pirani was taken on as scientific adviser to the Institute of Strategic Studies.

His political involvement does not exclude Professor Pirani from being a first rate mathematician-physicist. He is professor of rational mechanics at King's College, London, and specialises in the theories of relativity and of gravitation. His family having moved to Canada during the Second World War, Pirani received his

higher education there and in the USA. Carnegie Tech in Pittsburgh, Pennsylvania, awarded him a doctorate in 1951. He is now 42 years of age. Following his formal education, Pirani returned to England in time to participate in the famed "Cambridge Circus" of cosmologists which included Fred Hoyle, Herman Bondi, Raymond Lyttleton and Tom Gold. Next it was Dublin for one year, where he enjoyed the company of Erwin Schrödinger, one of the most profound thinkers in modern physics and biology. Pirani joined Bondi at King's College in 1956. He was promoted to professor in 1968.

Pirani's revolutionary activities are not restricted to alerting his scientific colleagues to their responsibilities, but extend to his behaviour within the university. He does not look like the stereotype of a professor, with his open-necked shirt, cravat and leather jacket. If it is not too much for his students to cope with, Felix even encourages them to address him by his first name. These are conscious efforts to break down some of the barriers erected by the system between members of the university in the various echelons of the hierarchy. However, Felix would not discuss his political views with those students who came to him to learn calculus or some other purely academic subject. Yet if he were teaching a course on the history of science or if he met his students in the canteen, it would be a different matter. "In order to survive at all," he says, "one must live with a certain amount of contradiction."

Currently Pirani is trying an educational experiment with a remedial calculus class. He wants them to exercise their mental facilities and to experience the joys of scientific discovery. Thus the course is rather free-form and does not follow the usual pattern of mechanical education based on rote and examinations. At first the students did not like it. It did not conform with the notion of education which had been imposed upon them. Now, according to Felix, many of the students are pleased to explore on their own. He, of course, is there to assist when they need new information. He would like to see universities where the students got their degree upon arrival and did not have to worry about exams. However, since the possessor of a university degree has special material advantages under the present system, university reform is dependent on social change.

As a scientist, Felix has shared a feeling common to most creative people—namely, being unable at times to distinguish work from play. This notion probably has little meaning to someone who has never been engrossed in an exhilarating pursuit for which they are paid. Felix is of the opinion that "the paradox of work versus play" is built into the present system and alienates and distresses many people. There is no apparent reasoning which prohibits the resolution of this paradox, but political activity, both personal and in a social context, is a necessary ingredient in any resolution. And Felix Pirani is certainly doing his part to politicise his fellow scientists.

The innovators

The success of do-it-yourself

Laser Associates, working from a director's home, had difficulty finding financial backers when the company was launched in 1967. Last year, with two factories, they were one of only four European companies to be taken up by SCIENTA

David Clutterbuck

Dillon Harris, Dick Payne, Robbie Brash and Alex Rankin had comfortable jobs. So why did they take an apparently risky gamble and set up on their own? Basically, explains Dillon Harris, physicist turned financial director, because they felt they could do a better job selling lasers than their employers, G and E Bradley. Bradley's was a general electronics subsidiary of the giant Lucas group, to whom lasers were not of any major interest. Moreover, set-backs in the automobile industry tended to be reflected in cuts in fringe research budgets—such as laser development.

On the assumption that business was waiting for the company that went looking for applications, the four left G and E Bradley in January 1967, to form their own partnership, taking with them four engineers. They calculated they would need about £50 000 to get off the ground, of which they themselves could put up a fifth, and approached the City for capital. Although lasers were receiving a great deal of publicity at the time, the City was not keen to invest in a small, unproven team. New

company acts had produced a distrust in the viability of small companies, and the only offers made were unacceptable, because they gave the partners no autonomy. In fact, this was probably the best thing that could have happened to them, for it forced them to take what they now realise was the more profitable, if riskier, course of action. Putting themselves deeply in hock, they began operating as a design and applications consultancy, working from their homes. For nine months Dillon Harris' home resembled a drawing-office-cum-workshop. It soon became apparent that they had to make some lasers, because the commercially available lasers were not suitable for the applications they had in mind. By March 1967, they had designed, built and sold a new ruby laser and a new argon-iron laser, at £3000 each. Fortunately, the customers paid up promptly, and further orders saw them (to their wives' relief) in a small, uninspiring factory on the Slough trading estate by the end of September.

By the end of the first year, with a turnover of