

license to any reactor — is a rational one. But it makes no sense when its prime object becomes a research reactor, which will generate only a few kilogram of waste every year. Such reasoning is like “shooting at sparrows with cannons”, as West Berlin mayor Walter Momper said recently (before he too lined up with those who oppose the reactor).

Apart from a weakly-worded letter from the association of national laboratories (AGF), the response from the research community has been nil. Researchers in other national laboratories and at universities could and should be making a broader and more concerted effort to save the Hahn-Meitner Institute — by petitioning politicians, for instance, or mounting a publicity campaign emphasizing the importance of the reactor, which will serve solely as a source of neutrons, for basic science.

Perhaps researchers in West Germany are afraid to be seen defending any institution linked to the word “nuclear”. Perhaps they themselves are opposed to licensing the reactor. But a more likely reason why researchers did not defend their colleagues at the Hahn-Meitner Institute lies in the zero-sum view of research spending. In this way of thinking, closure of one national laboratory means more money for the rest to share.

That is a view that is likely to be disappointed. There is no shortage of politicians and voters in Germany who are opposed not just to nuclear energy but to science *per se* and who would welcome the chance to roll back at least part of the tremendous post-war expansion of basic and applied research. For them, the Hahn-Meitner Institute is only one of many unnecessary research enterprises. West German scientists should realize that the closure of the institute will not mean more for those that remain but, ultimately, less for all. □

Big Bang hypothesis

A new section of *Nature* is not a vehicle for the publication of half-baked ideas.

FAITHFUL readers should not be too mystified by the appearance, on page 807 of this issue, of a newly named section of this journal. The rubric HYPOTHESIS is intended as an occasional vehicle for scientific papers that fail to win the full-throated approval of the referees to whom they have been sent, but which are nevertheless judged to be of sufficient importance to command the interest and attention of readers — sometimes, as in the case of at least two of the referees of the first document in this series, by the sceptics concerned.

The circumstances leading to the publication of the article by Arp, Burbidge, Hoyle, Narlikar and Wickramasinghe nevertheless deserve a little explanation. The authors are distinguished scientists who are known to be iconoclasts. The icon they would destroy is the conventional cosmology known, in shorthand, as the Big Bang model. Their general scepticism is not new. Arp, for

example, while distinguished as an observer, has over decades infuriated colleagues by his insistence that a number of quasars are physically associated with galaxies or other quasars at quite different redshifts. Burbidge, who with his wife, Hoyle and W.H. Fowler was one of the originators of the now standard theory of nucleogenesis, has argued since the discovery of quasars that these objects are not as far away as they seem. Hoyle, who fashioned the modern theory of stellar evolution, was one of the authors of the theory of continuous creation in the 1950s which is echoed in this paper. It is of more than passing interest, even to cosmologists, to know what these people now believe. It will be noted that they have not recanted.

Indeed, their argument may now be more relevant than it would have been a few years ago. The strength of the Big Bang model rests on the simplicity of its concordance with the uniformity of the microwave background radiation and the homogeneity of the Universe on various length-scales. But the mechanism by which galaxies were formed remains almost as much of a problem now as 20 years ago, while the homogeneity of the Universe has been confused by the still-shadowy recognition of large-scale structures. (If the Hubble telescope were functioning as intended, there would be better grounds for hoping that these uncertainties would be quickly resolved.) The difference between Arp *et al.* and their critics is essentially one of judgement. The iconoclasts say that the difficulties listed in their paper give the lie to the Big Bang; their critics hold that this evidence, even if confirmed by further observation, may yet be accommodated within the framework of the Big Bang. It would no doubt be different if Arp *et al.* had now put forward a full account of a more persuasive alternative theory, but that, at this stage, would be a tall order. This journal's position is that such a requirement would be a totally unreasonable precondition of publication, especially when the rest of the community at large will have a vivid interest in what this talented group is about. We are therefore glad to publish this absorbing document, in the spirit of constructive ‘consciousness-raising’.

A word of warning for other authors is appropriate. Arp *et al.* may well complain at the time and trouble they have spent in dealing with particular objections raised by referees. But the outcome is, as always, a more forceful argument — from which the referees still dissent. The most cursory reading of this article will show it to be at once interesting, substantial and couched in the familiar language of science. It is not just another half-baked idea. Others who may regard the new HYPOTHESIS rubric as an opportunity for winning wider circulation for unorthodox ideas should bear all that in mind. They should be warned that they will have to demonstrate the plausibility of what they wish to argue to a small army of sceptics and then convince the editors that the interest of what they have to say outweighs the objections that have been raised. It is not expected that contributions under this rubric will be frequent. □