

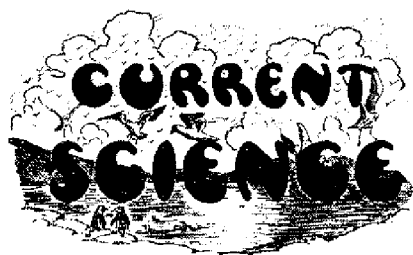
*et al.*<sup>4</sup> and Chain *et al.*<sup>1</sup>. It is also difficult to predict how the new genes could have been acquired by *Y. pestis* and by what mechanism. One can only have some idea about the overall picture rather than exact molecular mechanisms that took place during evolution. In this scenario, gene inactivation or IS-mediated rearrangements might have led to changes that increased virulence and that facilitated flea-borne transmission. The selective pressure for the same might have been provided by the concomitant and dramatic change in lifestyle undergone by *Y. pestis*, ensuing from its continuous association with the host and dependency on the flea vector for survival, which resulted in wholesale inactivation of as much as 13% of its genome that we observe today. These results may

represent an intermediate stage in genome compaction, as proposed in the evolution of other pathogens. Moreover, the uncertain role played by horizontal gene transfer into the chromosome of *Y. pestis* cannot be ruled out. To account for this, Chain *et al.*<sup>1</sup> rightly hypothesized that the acquisition of at least some of the six chromosomal regions uniquely conserved in *Y. pestis* strains, in conjunction with the high degree of gene inactivation may be responsible for the increased pathogenicity of this species. Whole-genome comparisons of pathogen near neighbours of distinct characteristics lay the foundation for future mutational, functional, and animal studies that will ultimately help elucidate the mechanisms underlying the emergence of new pathogens.

1. Chain, P. S. G. *et al.*, *Proc. Natl. Acad. Sci. USA*, 2004, **101**, 13826–13831.
2. Parkhill, J. *et al.*, *Nature*, 2001, **413**, 523–527.
3. Deng, W. *et al.*, *J. Bacteriol.*, 2002, **184**, 4601–4611.
4. Achtman, M., Zurth, K., Giovanna, M., Torrea, G., Guiyoule, A. and Carniel, E., *Proc. Natl. Acad. Sci. USA*, 1999, **96**, 14043–14048.

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## FROM THE ARCHIVES



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### Industrialization of India Essential for World Progress

‘Perhaps the most important factor which will have world-wide implications will be our attempt to raise the standard of living in India. Politics does play an important part in all events. It is obvious that the best and quickest way of bringing about national development is for India to have a National Government representative of the people. The present absence, however, of such a government does not justify that the thinking men and women of India should not devise ways and means of bettering the lot of their

fellow-beings to the best of their ability under present circumstances and in view of the future. I am not convinced that the rich and the wise in the land have done all they can for agricultural and industrial development of India.

‘It has been urged by some that the problem of India is largely biological: that health, food and population are our real bottlenecks. Those who know India intimately are fully aware of the facts that attention to agriculture alone cannot solve the problem of India’s poverty. Biology must be helped by physics, chemistry and engineering, even by mathematics. India cannot be healthy, prosperous and self-respecting, and education, medicine, and agriculture cannot play their important role unless a good bit of India’s population is devoted to pursuits other than agricultural . . .

. . . If I would not be misunderstood, I would make a suggestion to those European and Indian friends who are interested in the industrialisation of India not to fight for less or more to either side, but to come to terms honourable for both and do something to help Indian industry.

It is obvious that European friends in India will have to yield to the natural aspirations of India, namely, that industry in India should be largely managed by Indians themselves. Indian businessmen should see that co-operation with the allied powers is the quickest method of developing India. The energy spent in fighting may be better spent in co-operative development. If the bye-product industries of coal-distillation, the petroleum industry, the textile industry, the woollen, cotton, sugar and jute industries and the metallurgical and chemical industries are developed, the country will have a different complexion altogether and a co-ordinated programme of development in all directions will become a possibility. This plea I am entitled to make as President of the Indian Science Congress, as I am convinced that science has no future in India unless our agriculture and our industries are fully developed; more food and more health are dependent upon these factors. Scientific and industrial research thrives best when it is applied to material benefit to human kind and to existing industries and existing agricultural enterprises’.