

poor and urban rich persons is 0.054 t and 0.656 t of carbon per person respectively (Table 1).

It is indeed unfortunate that even in the 21st century, millions of women will be spending hours gathering biofuels travelling many kilometres carrying them, suffering health effects due to smoke arising in the process of use of biofuels and exposing also their children to these ill effects⁷.

Economic imperatives and institutional changes

Along with engineering efficiencies, economic efficiency needs to improve. For this purpose, energy system institutions have seen evolutionary changes, especially in the last decade or so where government involvement in coal, petroleum and power sector on a large scale is paving way to private sector enterprises. Erstwhile vertically integrated utilities may now be reinforced by distributive energy systems. Power generation, transmission, distribution, marketing and banking may be done by

separate companies. Exploration, production, distribution and retail marketing of fossil fuels may follow the same pattern.

Energy system in 21st century

From the above discussion, it is expected that the transition of energy system in the next century could be characterized as follows:

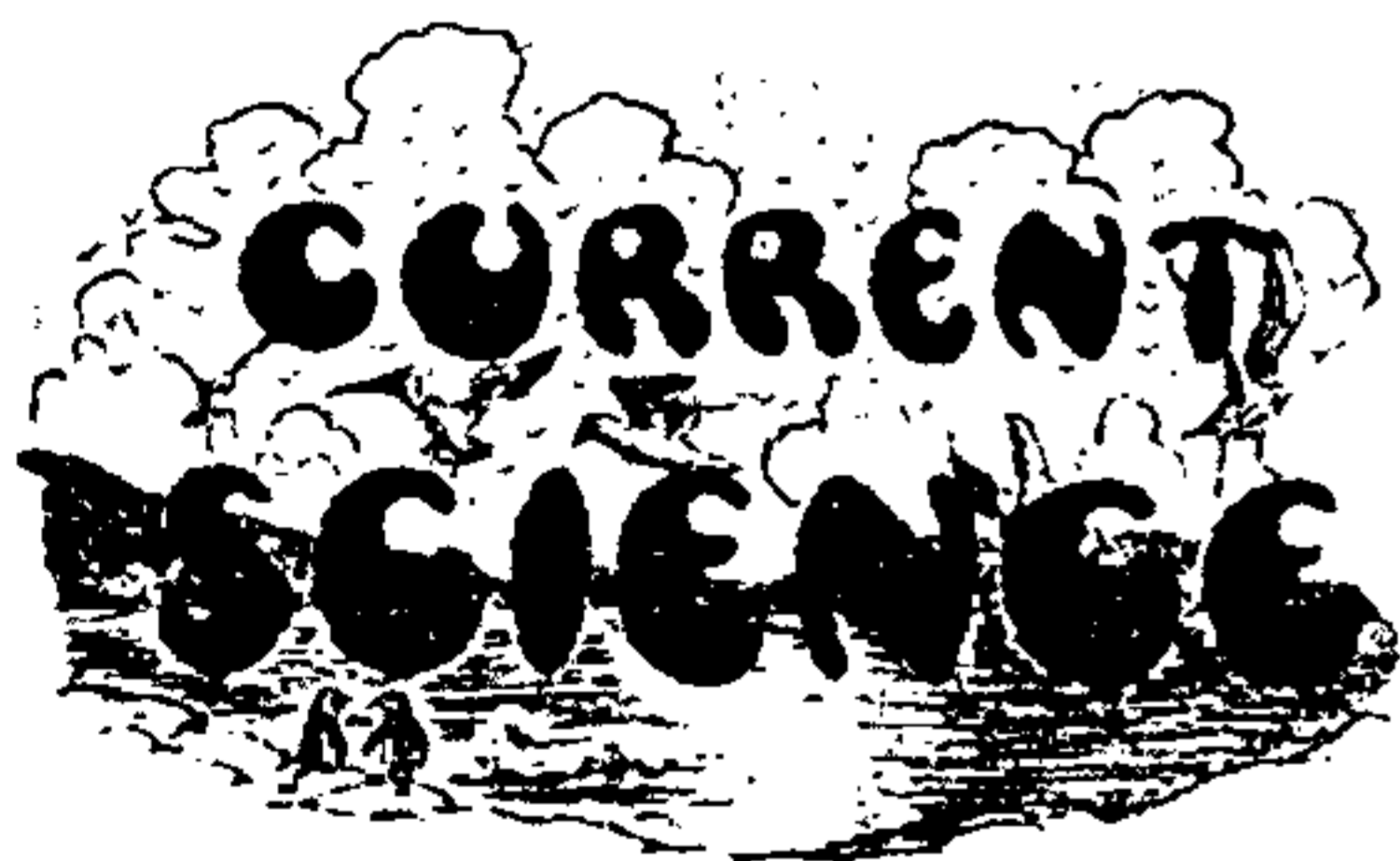
- Transition from low or medium efficiency to high efficiency;
- Fossil fuels based systems to decarbonized systems;
- Environmentally damaging to environmentally friendly systems;
- Inequitable to equitable consumption (?)
- Public sector and government to private sector undertakings.
- Highly centralized system to one with reinforcement distributed energy system.

One hopes that once again science and engineering would come forward to meet the challenges envisaged above.

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From the archives



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Unemployment among the Educated Classes

Addressing the graduates at the Convocation of Agra University in 1931, Sir Ross Barker is reported to have observed, 'You are like apprentices who have collected the tools of your craft. You will be judged by the way in which you will use them in after life and as

you are judged the University which has equipped you will be judged'. In his very commendable exhortation Sir Ross Barker evidently assumes that there is a reasonable scope for the employment of the labourer and the exercise of his tools and therefore the responsibility of using them for a high and honourable purpose belongs to the young men. The significance of these pregnant words, had they been spoken thirty years ago, might have been understood by the graduates, when the harvest was rich enough to provide employment for tools and labourers of all description. Everyone knows that to-day the output of graduates from the Universities in India is out of all proportion to the expansion of public service, industrial organizations and other big employing agencies, and the rate at which the volume of unemployment among the educated young men is increasing must fill all

thoughtful minds with apprehension. It is true that the acuteness of unemployment among the labouring communities is already straining the resources of statesmanship and possibly, in this case, at least partial relief may be given by rationalizing industries and by balancing agriculture and manufactures: but surely none of these palliatives can convey hope to the educated youth whose distress is as acute as it is widespread. That a compulsory restriction of the growth of population may be relied upon to bring succour, is, in our opinion, a suggestion more facetious than feasible and no far-sighted statesman can deem his stewardship fully and satisfactorily discharged until he has contributed to the solution of the problem which sooner or later is bound to become a menace to the stability of society...