

ments in government agencies dealing with S&T policy and planning, consultancy firms, NGOs, academic and research institutions and international organizations.'

In conclusion, these are the various views expressed by the faculty. Pranav N. Desai stated, 'The Centre equips students to build a comprehensive framework to deal with S&T issues, their analysis and formulation of new policies in actual situations. The narrow confines of disciplinary boundaries are broken at the Centre and there is exposure to both basic and applied social science skills, tackling S&T issues where social sciences are having a part to play'. V. V. Krishna said that a 'scientific discourse on Innovation Policy' is the need of the hour. He felt 'S&T policy must have a social science perspective, in order to catalyse and strengthen S&T in the developing world'. He also felt that the problem with the formulation and growth of S&T policy was the need to make the transition from R&D to Innovation Policy, wherein nodal agencies such as the

Department of Science and Technology should play a pivotal role. It is necessary, he added, to address S&T policies with a strong academic base in Social Science, strengthening the Science–Technology–Society interaction. A. Vasantha emphasized the requirement to generate teaching materials in the field of Science Policy studies. She said that awareness of Science Policy should be incorporated in various in-service training programmes, especially for school and college teachers, where a beginning has been made. Interaction between the various Schools within the University and the Centre could also contribute to enhanced Science Policy awareness. According to Vasantha, 'Science policy is a social policy and should not involve scientists alone, but should be formulated along with social scientists'.

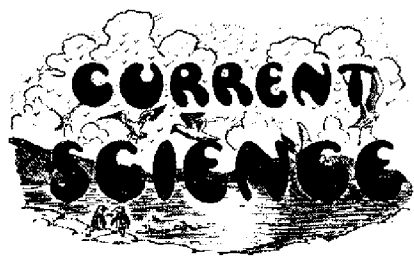
Says Parthasarathi, who became Chairperson of the Centre in August 2000, 'what we are targeting is to be a world-class Centre in S&T policy research area by 2005'. It is hoped to achieve 'world-class research for do-

main problems of the Third World'. For a start, the Centre has begun a M Phil in 'Dynamics of technology evolution in Indian industry', a programme on 'S&T in Energy Policy', the designing of the 'Office of research grants, industry collaboration, consultancy and intellectual property' for the university and a 'University–Industry interface' project that seeks to examine how the University and industry reacted to their relationship in the new economic environment. The revival and rebuilding of the CSSP at JNU augurs well for the S&T system in the country. Whether a 'new' CSSP will perform at the level its faculty seek, is a key question? Only the future will provide an answer.

I. Krishna, V. V., in *Futuribles*, Paris, 2000.

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## FROM THE ARCHIVES



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### Economic ornithology in India

Salim Ali

A charge that has been preferred against ornithologists in India, perhaps not altogether without reason is that they have been, and are, far too busy 'classification-mongering', i.e., quibbling over morphology and taxonomy, to bother about the *living* bird. Upto a point it may be argued in their defence that before biological studies on any group of animals can be undertaken it is essential that the forms belonging to that group should first be properly classified

and made cognisable. But while acknowledging the sterling work done in this direction by ornithologists – wholly European – during the last century and still being carried on by their torch-bearers to-day, there is no doubt that the various other aspects of Indian ornithology have suffered a corresponding neglect.

The Indian Empire encompassing as it does an infinite diversity of climates and physical features – ranging from the eternal snows of the Himalayan peaks to the torrid deserts of Rajputana and Sind – contains an avifauna that for richness and variety can scarcely be rivalled by areas of similar size elsewhere in the world. The total number of species and sub-species so far described is just over 2,350 (including about 350 winter visitors) and more are being added to the list as fresh material from insufficiently worked areas or groups becomes available. Notwithstanding this prodigality of material, our knowledge of the living bird in India is surprisingly meagre. Beyond the barest facts about the nests and eggs of most (but still not

all) of them, we know practically nothing concerning their breeding biology. The study of migration – one of the most engrossing of bird activities and one that has stirred Man's wonderment from the earliest times – is here still in its veriest infancy compared with the researches and the strides being made in Western countries. Bird ecology, despite the vast natural facilities, remains practically an untouched and virgin field, while Economic Ornithology – an aspect of bird study that should have been, if for purely materialistic reasons, one of the foremost to receive attention in an agricultural country like India, has not even been scratched on the surface.

Besides being a source of direct food supply to millions of human beings in this country, it is little realised that wild birds stand in a class by themselves – second only, if at all, to predaceous and parasitic insects – as destroyers of, and natural checks on, harmful insect pests and other vermin, and as agents in the cross-pollination of flowers and the dissemination of seed. Directly or

indirectly they exert their influence in practically every branch of human industry.

Economic Ornithology is the science that concerns itself with striking a precise balance between the damage caused by birds to Agriculture, Horticulture, Forestry and other human interests as against the active benefits they confer in less obvious ways. An increasing amount of importance is being attached in recent years to this science in Europe and America with excellent and far-reaching results. In the United States there is a well-organized department carrying on continuous and intensive research work on the life-histories of birds with special reference to their food and feeding habits under the Bureau of Biological Survey, a subsidiary branch of the US Department of Agriculture.

The only attempt systematically made with the object of evaluating the economic status of birds in this country was an investigation on the food of cer-

tain birds by Mason and Lefroy at Pusa. The results, published as a *Memoir of the Department of Agriculture in India* (Vol. III, Entomological Series, 1912), while meagre in extent and circumscribed in scope, demonstrate the vast possibilities and usefulness of this type of research in India. Their weakness lies in the fact that they deal only with adult birds whose diet we know often differs completely from that of juveniles. In Fringilline birds for instance – the tribe to which our common Sparrow belongs – the food of the young consists almost entirely of caterpillars, moths and other soft-bodied insects while that of the adults is almost exclusively seeds and grain. The investigations fail to appraise the *whole* value or status of the birds since they completely overlook this phase of their life-histories. Besides, it is felt that the studies that have been made by an analysis of stomach contents in different months of the year cannot really be appreciated without a knowledge of the density of the bird

population on areas of various types and at different seasons. The taking of bird censuses has not been carried out anywhere in India at all. A number of methods for doing this have been employed successfully in Europe and America, none of which could perhaps be applied in their entirety to Indian conditions but which it should not be difficult to adapt. Active co-operation would be necessary from a band of workers, whom it should be possible to find among the biology undergraduates of our various colleges and universities. Tracts of from 40 to 80 acres have been found to be conveniently controlled by one person, but in many areas in India, owing to the density of bird population and other factors, 20 to 25 acres will probably be found to be a more suitable unit. Counts are made at frequent intervals of all birds present in the controlled areas and also of the breeding population of certain selected species over much larger areas by counting their nests.

## MEETING REPORTS

### Globalization of agriculture\*

The specific objectives of the workshop on globalization of agriculture were (i) to examine how globalization of agriculture would affect agricultural production, change efficiencies and influence social issues in India, and (ii) to appraise the role of research and development in agriculture in the changing scenario to take advantage of the globalization process. The workshop took stock of the existing trade models and assessed the role of R&D in agriculture and technology intervention in agricultural trade. It also assessed how promising technologies, value addition and domestic reforms would promote trade and affect efficiencies.

In his inaugural address, R. S. Paroda (Indian Council of Agricultural Re-

search) said that globalization is now an irreversible process and is not a mere economic and financial phenomenon. Liberalization of agricultural trade has resulted in increased globalization of Indian agriculture. The share of agricultural trade in agricultural GDP has increased from about 6 per cent per annum during the triennium ending 1990–1991 (before liberalization) to about 9 per cent in the late 1990s. India is presently facing serious challenges on the import side. When the international prices go very low, imports become cheaper, causing abrupt fall in domestic prices of agricultural commodities.

Paroda said that India has a strong institutional and human resource base in science and technology which is fully capable of bringing about a technological transformation of agriculture, paving the way for a rainbow revolution. India should also be adequately prepared for the quarantine as well as quality war against our products in the world market. India has to create world-class referral laboratories at many

places. Harmonization and implementation of WTO, consistent sanitary and phyto-sanitary measures are also necessary. Publicity and public awareness relating to quality consciousness and literacy campaign for IPR-related issues would also be crucial in future.

V. L. Chopra (President, National Academy of Agricultural Sciences) in his address said that with the introduction of globalization, the exports from the country in real terms have actually declined. The opening up of imports has decreased the prices of domestic agricultural produce. For gaining entry into export markets and retaining a competitive edge we will need the crucial component of research. Contemporary technologies of genetically altering crops for specific traits are also likely to throw up issues, which will require newer approaches to decision-making about research prioritization.

Y. K. Alagh (S. P. Institute of Economics and Social Research) in his address said that liberalization is not just withdrawal of the state from economic

\*A report on the national workshop of 'Globalization of Agriculture: Research and Development in India', organized by the National Academy of Agricultural Sciences (NAAS) at the Kerala Agricultural University Main Campus, Trichur, during 2–3 February 2001.