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From Pusa to . . . ?

THE disastrous earthquake of last January brought with it a chain of problems not the least important of which is the future location of the Imperial Institute of Agricultural Research now situated at Pusa in Bihar. The buildings of the Institute were badly damaged by the earthquake, so, on the recommendation of their experts, the Government decided to abandon them and construct new ones in the neighbourhood of Delhi. This decision, which would involve far heavier expenditure than repair to the old buildings, has now met with considerable opposition. The controversy has indeed assumed such serious proportions that not a day passes without some communication to the press—an important interview, resolution passed at a public meeting or proceedings of a lively discussion at a council of legislatures. Although the social, the economical and the political aspects of the question are now being hotly debated, yet very little is heard regarding the technical considerations which prompted such a decision. In fact, the scientific opinion of the country has hardly expressed itself on this highly important question. It is our present object, therefore, to view the position mainly from the scientific standpoint and to consider the possible influence of the proposed transfer on the progress of agricultural science in the country.

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Before taking up a discussion of the various technical points at issue, it would be of some assistance if

we could define, in a general way, the objects of the Institute, and the type of facilities that are required for carrying them out. It is true that for a long time, the Pusa Institute, with its various sections and subsections distributed in the different provinces of the country, was the only centre of agricultural research. Problems of not only All-India character but also those of provincial interest had therefore to be investigated by the Institute. Post-graduate training in agricultural science had to be imparted and the staff of the newly created provincial agricultural departments trained in methods of research. Today, the conditions have greatly altered. Most of the provincial departments have been adequately organised and are in charge of competent men who could deal with all the local problems. Many of the Universities, as also research institutes, have organised post-graduate training in different branches of agricultural science so that the need for special courses of the type that was in vogue in the past have also greatly disappeared. Even problems of all-India character which the provincial departments cannot adequately handle are fast diminishing, so the Institute is now largely free to devote itself to problems of fundamental interest. In view of the importance of this type of work and the misconception that generally prevails regarding the utility of fundamental research, we wish to deal with it at some length.

The history of the development of scientific agriculture, as also any other branch of applied science, shows that the most important discoveries are made not by those working on fields or in factories but by pure scientists who plod in the seclusion of laboratories and pot-culture houses for the mere sake of small additions to knowledge. Those engaged on field work or factory operations are largely concerned with the immediate problems of their work and cannot find either the leisure or the opportunity to think out new ideas and to investigate their possibilities. On the other hand, the pure scientist has very few such worries and has often the freedom to think boldly and the facility to work out his ideas irrespective of cost or considerations of immediate return. Most of his researches may be of purely academic interest, but a single accidental finding with a new idea for its background may lead to the most far-reaching developments and thus make up thousand-fold for all the failures in the past. Such is the value and significance of fundamental

research conducted by right men in the right environment; such is the right spirit in which agricultural research is being carried out at Rothamsted and other leading experimental stations of the World; and such should be the ideal before those in charge of the destinies of the Imperial Institute of Agricultural Research. Administrative routine and commercial enterprises should be reduced to the minimum and the research workers given ample freedom and facilities to devote themselves to fundamental research.

Let us now proceed to critically examine the various suggestions that have been made and to determine how far they would help towards the attainment of the ideal before us. Taking first the suggestion that a number of research institutes should be created, we should agree that it would be quite useful to have them, though not for the purpose intended by some of the proposers. There is ample scope for several lines of fundamental research but there is no need to duplicate the advisory work now conducted by the provincial agricultural departments. As for the proposed distribution of work between different provincial centres, it is highly undesirable. The different sections should be together at one place so that the workers may have opportunities for meeting each other and discussing problems of common interest.

Assuming that, at least for some time to come, there will be only one Imperial Institute of Agricultural Research, we shall next consider the type of facilities required for conducting fundamental work of a high order. Firstly, the Institute should be situated in a healthy locality which enjoys a salubrious climate. From this point of view there is not much to choose between Pusa and Delhi. Both the places are as good or as bad as most other places on the Indo-Gangetic plain. If a better climate is sought, the claims of Dehra Dun, Poona or Bangalore will come for consideration. Secondly, the buildings should be safe and there should be no fear of danger to life and property.

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Thirdly, there should be ample laboratory and library facilities. These are now being liberally provided by the Imperial Institute and will continue to be available irrespective of location. Fourthly, there should be a proper scientific atmosphere both in and around the place. This is of the greatest importance if work of high order is to be turned out. The scientific atmosphere of a place is partly due to tradition and partly to the example of some of the senior workers. Even a small band of enthusiasts with proper scientific outlook can infuse new spirit into a place and impart

new traditions. Equally important is the scientific atmosphere around a place. There should be in the neighbourhood a number of research institutions devoted to other branches of science so that specialists in different fields will have opportunities to meet each other and discuss problems of common interest. Contact with workers in other fields widens one's outlook and facilitates better understanding of scientific problems. It infuses a spirit of comradeship and leads on to co-operative undertakings in which specialists in different lines join together in the investigation of problems of common interest. It even promotes a spirit of healthy rivalry which is highly desirable and helps to draw the best out of the workers. It is indeed this apparently vague, but nevertheless real, scientific atmosphere which is the secret of the success of most of the leading scientific institutions of the World. Judged from this point of view, both Pusa and Delhi will stand condemned. Pusa itself is isolated and the nearest centre of learning is Patna, a good distance away, on the other side of the river. Calcutta is still farther away and a long and expensive journey has to be undertaken to reach it. Benares and Lucknow are also a long way off. Coming to Delhi, it is undoubtedly a great political centre. Members of legislature and other leading citizens of the country visit the place from time to time. Meetings of the Advisory Board and the scientific committees of the Imperial Council of Agricultural Research are also being held there at least once a year. In spite of these associations, Delhi has yet to build up a scientific atmosphere. The Colleges in Delhi have, unfortunately, very few facilities for scientific research, so naturally much should not be expected from the University. Among the other centres of learning, Agra is some distance away; Lahore and Allahabad are farther still so that Delhi may also be regarded as isolated from the scientific point of view. If a transfer is decided on and if the value of proper scientific environment is taken into consideration, the Institute should be removed not to Delhi but to the neighbourhood of Allahabad, Bangalore, Bombay, Calcutta, or Lahore any one of which would be found more suitable.

In a vast country like India, no single place can be regarded as being easily accessible from all the provinces. If Delhi is easily accessible from the Punjab, Bombay, Central India and certain parts of the United Provinces, Pusa may claim to be accessible to Bihar and Orissa, Bengal, Assam, parts of Central Provinces and a large section of the United Provinces. Both the centres may, on the other hand, be regarded as being

inaccessible to Madras, Mysore, Hyderabad and South India in general. Thus, the charge of being inaccessible may be levelled against any place in India so that it is not quite fair to condemn Pusa mainly on that account. The things that really matter are good

facilities, right talent and proper scientific atmosphere: if these are ensured, an institute situated even in the most obscure corner of the country can come to the forefront, and attract visitors not only from the whole of India but other parts of the World as well.

NEWS

NEW SPECIES: 5,200 FOUND PER YEAR

... "Charting the rate at which discoveries of new animal species have been made since 1758, a French scientist has determined that discoveries reached a peak of 12,100 new species per year between 1900 and 1950, and that in the second half of the twentieth century the discovery rate has leveled off at 5,200 species a year. Zoologist Bernard Heuvelmans . . . estimates that a total of more than 1.2 million species have already been identified, as opposed to the 4,406 that were known in 1758, when Carolus Linnaeus first

categorized the different classes of animals. Over 70% of the known animal species are insects, (Heuvelmans) does not attempt to estimate the number of species that remain undiscovered (estimates by other scientists range from 4 million to over 30 million) or how many species became extinct before their existence was documented." (Reproduced with permission from *Press Digest, Current Contents*®, No. 37, September 10, 1984, p. 14, Copyright by the Institute for Scientific Information®, Philadelphia, PA, USA.)

SHOULD MAN MANIPULATE WILDLIFE?

... "A heightened interest in nature and wildlife has caused many environmentalists and naturalists to vociferously oppose what they call 'meddling with nature'. . . . Advocates of hands-on wildlife management point to the many organisms whose declining populations have been arrested or revived by manipulating them or their environments. These include bald eagles, black-footed ferrets, peregrine falcons, ospreys, whooping cranes, bobcats, Arabian oryxes, rare ferns and lady slippers. . . . One of the most articulate spokesman for managing nature when crises arise is Russell Peterson, president of the National Audubon Society. In an interview he said: "Years ago we wanted to let nature take its course — no captive breeding or other artificial actions. But things got so bad that we had to do something about it." Peterson has on many occasions stated his belief that because humans have created many of the conditions that have

endangered or wiped out other species, drastic means were often needed to correct them, a chore, he says, 'that is our responsibility'. Many of those opposed to man's jockeying of wildlife say that the problem of habitual destruction should be addressed before wild creatures themselves are manipulated or bred in captivity. . . . 'Man is poor at understanding the consequences of his actions.' David Brower (founder and chairman of Friends of the Earth) said, 'and he should not try to rearrange what he does not understand. There is an intricate balance of life on earth, and putting pieces out and putting them somewhere else, or rearranging them, upsets the earth's biota as a whole'." (Reproduced with permission from *Press Digest, Current Contents*®, No. 37, September 10, 1984, p. 13, Copyright by the Institute for Scientific Information®, Philadelphia, PA, USA.)
