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The need for an intensive Research in the Science of Rural Economy. *

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The word research has long been associated with investigations done in the scientific subjects which are usually studied by most educated men of the country. The scope of research does not end with these subjects, as, in any field of study or activity pursued for the benefit of the people at large, the idea of research still holds good. Compared with physics, chemistry, etc., research in the science of agriculture has been of recent origin. Research has its own reward. Careful observation, analysis of materials and sound enquiries are required to build up the foundation on which the edifice of common good and prosperity have to be built up. One important division of the science of economics, so far as our country is concerned, is the subject of rural economy. The importance of this subject is well known but many have not clearly understood the nature and implications, because it has not been studied exactly in the manner of other sciences. It is seemingly simple but really complex in the interaction of its various aspects and therefore neglected by the intelligentsia of the country. In the words of Prof. Radhakumud Mukerjee, "Rural economy being the simplest and oldest form of man's adaptation to environment thus reveals in the sequence of stages certain fundamental types which all go back to the cumulative effects of environment and biological succession. The basic economic adjustments are co-extensive with civilisation. Hence rural economics is an adjunct of the comparative study of civilisation."

The need for research. We know very well how in recent times many towns have newly risen and how others have developed remarkably in the direction of greater wealth and amenities. But our rural areas and villages continue to be in the same old state without any progress in the direction of having modern amenities and improved facilities for making life happy. There has been deplorable stagnation in the life and activity of the rural folk during a period when in other parts of the world there has been remarkable advance in all directions. But rural India is thousands of years old and its economy and problems are of an entirely different nature from what they are in western countries. What has been achieved in those countries in the past few decades, has not been done in ours in the course of ages. The question is whether we shall also advance on the road to modern living and greater prosperity or continue to stagnate as of old. None of us desires the latter alternative. In that case the necessity for the proper understanding of the problems that confront rural folk in their aspirations for better living and more profit from agriculture, becomes apparent and unmistakable.

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Methods of research. The field of research is very wide and unlike in other science subjects it is not confined to the four walls of the laboratory. One method is by personal enquiry and careful observation. Another is by the issue of suitable and elaborate questionnaire and analysing the answers received from a large number of cases. There may be personal investigations on other lines and problems not covered by the above two.

Differences between tracts and regions. There are very many differences in living conditions, nature and physique of people settled in different tracts. The social customs, time-honoured village practices and many other aspects of communal life are different in different areas. Much of the habits and ways of living of the community are very much affected by the geographical position of the tract and its climatic conditions. The dry tracts differ from the wet and the mixed tract differs from both. Unhealthy areas like the hills and Agency tracts have their own problems of rural economics and welfare. The peculiar influences that prevail in each such tract have to be studied in detail before attempts can be made to bring about the desirable renaissance.

Nature of work already done. Some work has already been done in the various provinces as in the Punjab, Bombay and Madras, in the nature of economic or village surveys. Such enquiries have given only a mass of statistics and have not covered much of the living and social conditions of the community. As a result of those enquiries it has not been possible to formulate proper lines on which action could be definitely taken forthwith to bring an all round improvement in the life, habits and earning capacity of the rural population. A survey of cottage industries and indebtedness of the agriculturist has been made and reported upon but these have been undertaken for the province as a whole and the conclusions and suggestions for improvement are broad and general in character.

Lines of research work to be undertaken. 1. *Diet.* Different kinds of grains are consumed in different localities and there is also difference in the way they are taken. The preference for particular grains has been mainly according to availability or the ease with which they can be grown in any area. Detailed investigations have not been systematically done as to why certain classes prefer certain kind and quality of grains and why they take them in a particular way. Work on nutritive values of these grains and various food stuffs has thrown some light on this aspect, but enquiries and investigation on the spot will give more fruitful results. Yellow *cholam* is preferred to white in Coimbatore but white is preferred to yellow in Tinnevelly. *Ragi* is preferred to *cumbu* and sometimes *cumbu* is preferred to *cholam*, as also broken rice to *cholam*. Though fancy plays an important part there may be other reasons for the choice of grain used as staple food. The Village Industries Association has done some work in this line but work applicable to each homogeneous tract has to be undertaken in order to understand the aspect perfectly.

2. *Physique.* The generality of men in some regions are robust and wellbuilt whereas in others they do not appear so healthy. Besides the natural conditions of climate, there are other factors as food and occupation which are responsible for the build of body and the inherent strength. Investigations have to be made into this aspect fully so that efforts can be made to improve the diet and living conditions keeping the ideal of a sound mind in a sound body as the goal to be reached.

3. *Production.* The aim should be not only increased production from land but also from other occupations such as the village industries and subsidiary avocations. The Department of Agriculture has been helping to produce more from land, but the economics of production on land and that of the other wealth-giving activities have not been fully studied on a systematic basis. What is required is a concentrated study of each individual area with the factors of production uniform for that area. This helps in understanding clearly the weak points and the defects so that remedies and methods may be suggested for achieving the objects in view.

4. *Feeding stuffs and fodder for cattle.* It is well known that the generality of cattle are undernourished and the undesirables have not been weeded out. The cause is again economic but this could have been overcome to some extent by proper knowledge and adequate help in the improvement of the types of cattle. We have not made intimate studies of the various kinds of seeds and products that go to the manure pit so that we are content with wasting them instead of finding more profitable use as food for cattle. One outstanding example is the use of tobacco seed oil cake which has been experimented upon and found to be good as cattle food. A large quantity of tamarind seed and seeds of various kinds of avenue and forest trees go to waste every season. A concentrated study for each tract for exploitation of such materials would probably yield favourable results for the benefit of the cattle. Work on the nature and use of other types of fodders such as grasses, leaves and fruits of various trees and plants is also required, so that the periods of scarcity of fodder in certain tracts, can be tied over easily. It has been observed that in the western hilly tracts of Madura the cattle are very much resistant to the common diseases that are prevalent among those in other places and that feeding with babool pod powder gives a glistening colour to the skin of the cattle. These serve to show the scope for further extended research and the probability of useful results accruing therefrom

5. *Data for subsidiary occupation.* It is learnt that in Japan more than one third of the rice growing population are rearing silkworms. We are utterly lacking in data for subsidiary occupations particularly with reference to individual regions or districts or in connection with growing of particular crops. We should have full information on the amount of leisure available for the various agricultural communities, i.e., the slack seasons, the aptitude of the people and the facilities that could be given by the State or other agencies and such other details for planning for profitable utilisation.

Without these there is no possibility of chalking out popular, workable and profitable lines which could be taken up with avidity by the communities in need of such help.

6. *Efficiency of labour* Due to the pressure of population in many places the efficiency of labour is anything but satisfactory. Data on the movement or seasonal migration of labour and the causes thereof and also on the weekly hours of work extracted by employees in various localities and conditions, is required to assess the degree of efficiency or inefficiency of the labour. The efficiency of the tenant class as agricultural labourers under present conditions is open to question. There is utter lack of the team spirit among many of the cultivating classes and this tells upon their efficiency in production which again affects the total productive capacity of the country.

7. *The Seasonal factor.* Observations and record of the various weather elements in all the places are necessary to give timely forecast of weather conditions for the benefit of every class of the agricultural population as also for those who are affected by changes in weather. The collection of mere rainfall data, though useful, is not enough to plan a method of forecasting by the weather prophet and serve the needs of such a large diversified rural area.

8. *Village industries.* We have no knowledge as to how far foreign goods, machinery and implements have replaced local ones and also their repercussions on the position of village artisans in the socio-economic structure of the village. There is scope for developing small central factories in the important villages for the supply of many articles of common use and spare parts of implements required by the different classes of the villages. An ambitious programme was drawn up by the village industries association some time back but nothing tangible could be achieved, probably because it attempted to cover a wider area, instead of concentrating in particularly favourable areas.

9. *Rural credit.* Apart from what has been done in this line we do not have data for indebtedness according to villages or group of villages, the various types of credit institutions working in the different rural areas and the percentage of people taking loans from these. The debt per head has to be correlated with the production per acre for every village so as to adjust the starting of the relief-giving agency in order that the place of greatest intensity in indebtedness may get the relief sooner than others not so badly steeped in the evil.

10 *Communications and transport.* The facilities that actually exist in the rural parts for transport of produce and people are to be studied just before initiating improvements. Data for the total mileage of good and bad roads, and the number of miles of new roads essentially to be laid in the different areas, have to be collected. Our rural areas are noted for their lack of good roads, communications and modern transport system. The

present day bus services have no doubt improved the situation, but many villages could not be reached even by these, for want of motorable roads. The road transport has a great future in our country because of the obvious huge cost of construction and working of railways. The loss sustained per annum by slow movement of produce due to no roads or bad roads, in these progressive days, has not been ascertained. The economics of the use of the rubber tyred cart in the rural areas, have to be studied fully, before recommending these for popular use. There is scope for further improvement of the bullock cart and this line deserves investigation.

Conclusion. There is a vast field of great importance and potentiality waiting to be developed on modern lines and it is on this, the countryside, the future prosperity and the measure of the power of our influence over other countries depend. The Royal Commission on Agriculture concluded, "If the inertia of centuries is to be overcome it is essential that all the resources at the disposal of the State should be brought to bear on the problem of rural uplift. What is required is an organised and sustained effort by all those departments whose activities touch the lives and the surroundings of the rural population." The first effort in this direction would be the organisation of a *Rural Science Research Institute* in every province. This institute will not only undertake the research on the lines mentioned above but also to some extent coordinate the activities of the different departments and bodies engaged in the uplift of the rural population. Compared to what has been done in the United States of America, Russia and other countries where rural areas dominate, the state of affairs in our country can be said to be even primitive. Every one should fully realise the implications of the following words of Lord Linlithgow, "India's wealth in an overwhelming degree is in her agriculture and upon the field of the cultivators is founded the whole structure of India's economy."

Thevetia neriifolia Juss.—A New Indigenous Vegetable Insecticide

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Introduction. There is now an urgent necessity for finding out suitable substitutes for the foreign insecticides which are difficult to procure under the prevailing war conditions. Investigations were therefore started at the Agricultural Research Institute, Coimbatore, to determine whether any of the locally available plant poisons could effectively serve as insect killers. A few well-known poisonous plants like *Thevetia neriifolia*, Juss. (roots, stem bark, leaves and kernels), *Nerium odorum* Soland. (root, stem bark and leaves) *Strychnos Nux-vomica* L. (seeds) and *Abrus precatorius* L. (seeds) were tested. Of these only the kernels of *Thevetia neriifolia* Juss. were found to possess insecticidal values of a high order.