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Integration of Agricultural Research, Teaching and Propaganda

From the Chemists' point of view

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The title of the subject chosen for the symposium today is of topical interest and quite apt at the present moment. It is apt in the sense that the pros and cons of the subject will be thoroughly discussed and the extent to which the integration of the three aspects pertaining to the science and technology of agriculture can be proceeded with if it is not in existence already, and if it has already commenced and is in existence, how best to improve it.

At this stage a little introspection is necessary and to start with let us first examine the term "Integration" itself, and secondly see how far it is in vogue with reference to the development of agriculture in this state.

The word integration, as is understood, is to combine the separated parts or elements to form an integral whole. Surely the three parts, viz., research, teaching and propaganda have to be integrated for attaining progressive development in agriculture as a whole. In regard to the second point no contradiction is possible if we say that as far as the Madras Agriculture Department is concerned there is already a certain measure of integration of the above mentioned three aspects. The present set-up of the Department is based on the principle of integration of all the three branches. What is required at the present juncture is one of reorientation of the whole system, to gear it to the rapid strides of development of agriculture in the second plan period.

Despite the fact that there is a possibility for divergence of views on the subject, one cannot fail to understand that in a progressive world the ideals of agricultural development are converging towards a common goal, namely, that agricultural progress must keep pace with industrial progress. In all probability ideas will differ about the importance to be given to the one or the other of the aspects mentioned already.

The object in writing this is to put forth some suggestions in the hope that they may provide food for thought and discussion during our deliberations today. The suggestions may or may not evoke

immediate response but it is believed that they will atleast raise ripples, if not waves in the thinking public and the powers that be which may ultimately stir us to achieve the objective we have in our minds

There is no real antagonism between the function of teaching and that of research. A good teacher has to teach, train research workers and do research himself. Even so a research worker has to teach and train other workers in the techinique of observation with an intensive effort and with open but disciplined mind to seek the truth with the aid of the intellect and the devices invented by the genius of man for wresting the secrets of Nature. In the pursuit of science, the search must be disinterested, and motive selfless, the attainment of knowledge being the only goal and reward. An accomplished scientist possesses all these faculties and it devolves on him to teach others to achieve the same attainments in the art and technique necessaay to be a good research worker.

In a college which professes to teach science every teacher must do research. By doing so he will rise in the estimation of his students as a person who speaks with authority. But it should be borne in mind that the teacher must have full freedom in the choice of the subject for his study and no quantitative assessment of the work turned out by him should be made. Any little contribution by one who is devoted to teaching should be welcome.

In regard to the research worker, by engaging in teaching he learns the art of presentation of the results of his work. He becomes an expert in spreading the knowledge he gained by research to the public. Virtually he becomes an expert propagandist. In all these spheres of activities the allocation of one's time between the activities will depend upon one's ability as well as the needs of the college, Institution or the department to which one belongs.

Here it is necessary to be a little guarded. We have to exercise a little caution in the implementation of this pattern of integration of the three branches of the advancement of knowledge. We have to deeply consider at what stage or level of agricultural education that the teacher is expected to be a research worker himself and vice versa. Our own view is that it should be at the post-graduate level. At the under-graduate level the teacher has to impart a great deal of basic knowledge and train the students in the fundamentals of the particular field of study. Thus he will be confronted with titanic amount of work and very little time left at his disposal to carry on a piece of research himself.

Under such circumstances a teacher should be chosen with the basic qualification and a lot of experienee in teaching to his credit rather than for his high academic attainments with very little experience as, it is the art of putting across to immature minds that is more important than the high attainment of the teacher at the under-graduate level. But at the post-graduate level, there is more of specialisation and those charged with the responsibility of teaching the students, who are invariably a handful and who need guidance rather than actual teaching, the teacher really has plenty of time to devote for his study and for his research project. As such the teacher has to have really academic attainments and qualifications.

In our opinion there should be a separate unit for each branch or faculty of science. There should be a professor for guiding post-graduate research workers. He should not be burdened with routine work, except for a few hours of actual teaching work per week. He must devote the rest of his time to do and guide research. The responsibility of teaching the under-graduate should be left to a separate staff of lecturers under him. For the research branch it should not be as it is at present. A little re-organization may be necessary for greater efficiency and progress. The whole work must be viewed under three aspects as (1) Fundamental, (2) Experimental, (3) Developmental. Fundamental studies comprise original research of a long-range nature, or of a new line which will not have anything to do with immediate or urgent problems. Being of a nature that no immediate results are possible, must be left to a few workers to pursue in peace. Some findings of great import are bound to result from such a study sometime. Regarding the second, experimental, in this field all agronomical work of a co-ordinated nature such as manurial trials, nutrient requirement, fertility status of soils etc. should be tackled. The third is the developmental aspect for which a separate unit is necessary. All the work of an utilitarian nature must come under the purview of this unit, e. g. analytical and advisory, soil testing etc. All these different units must be individualistic in their activity but must be integrated under a chief co-ordinator, who may be the Professor of Chemistry himself. His work will be to decide on policies of research. With such a sort of integration there will be greater efficiency and smoothness to achieve better results.

Happily, the teaching department, which was independent till 1938 was amalgamated with the respective research sections in this Institute thus giving a wide choice of Lecturers to be drawn from the members of the Institute working in different specialized branches.

A little digression on the set-up of research in the country may not be out of place here. At present though there seems to be a lot of orientation and co-ordination of research, yet there are too many bodies which are entrusted with research activities. For example there are the I. C. A. R., I. C. M. R., C. S. I. R., Irrigation and Power research and Universities, the State Government Institutes and several other such bodies. Besides, there are the several commodity committees, such as the Committees for Cotton, Sugarcane Oilseeds and so on. Even though great care is taken in order that there may not be any over-lapping in the research projects undertaken, in practice there is duplication in staff and projects in spite of the recently formed crops Commodity Committees and other co-ordinating agencies.

The time involved in sanctioning any research project is also considerable with the result that the problem chosen for solution becomes out-moded by the time it gets through sanctioned for implementation.

There is yet another aspect, namely, that owing to the fact that several scientific bodies are functioning in different ways there is always disparity in emoluments for research workers under the different fields. This tends to make the qualified jump from job to job with utter setback to the work they should have prosecuted unhindered attaining specialization and fame in one field. Our men are consequently jacks-of-all-trades. To catalogue all the short-comings in the present system will not be of any avail. Let us dilate upon the pattern of the future set-up for effective co-ordination, speed up execution, and quick achievements. There should be one All India body for Research in all fields with the ramifications necessary for the different aspects of science. This system will be conducive for unification of research with little of duplication as well as unification of emoluments at the different levels and will not induce scientists to hop from post to post to better their personal prospects with adverse resuts from the point of view of the country at large and the specialization needed for progress. It is futile to attempt to give details on this point, for once the view is accepted on principle the rest can be worked out easily.

Regarding propagation of the results achieved through research it is also integrated but at a higher level. It is a field for the extension staff who may offer some valuable suggestions for a better blending of research and propaganda, the twin wings of the agricul-

tural science. If we may throw out a stggestian we feel that a liaison officer at the Research headquarters is necessary. He should be a person of versatile talents with academic distinctions. He should be in a position to scan the several achievements of the different research sections and sift them to select the best and pass them on finally to the publicity officer for publishing and presenting them to the wider public. The actual research worker or the specialist may not have the time or the patience to translate the results to the lay public. His excitement will subside the moment he reaches the goal in the particular problem in which he works, but before that he will have a hundred other problems to probe into and thus feels little for his achievements and cares much less to publicize it. In fairness to him and to his mental activity and to give him enough time to publish his results to the scientific world he should not be bothered with this extra work.

The Liaison or the Research Co-ordination Officer will be one who has a comprehension of the activities of the various research units and he will be in a position to judge what is useful for the lay farmer. He will also tour the whole State, meet the farmers of the different regions, learn their problems and their difficulties and bring them to the knowledge of the experts.

In regard to the present system of propaganda a suggestion may not be out of place. The personnel in charge of translation of research achievements and dissemination of knowledge of scientific agriculture are invariably people who graduated a long time back and have become a bit archaic in thought and action because of lack of opportunity for them to keep abreast of the vast and rapid developments of scientific knowledge. We do not question their sincerity or talents and most of them are doing their best on the extension side. But, if by a system of rotation such extension people are given a short refresher course of 12 to 15 weeks duration at the research headquarters they will not only develop new ideas and outlook but will better the best they are doing now. For this purpose a regular set of staff at the research centre is necessary who may work under the guidance of the Liaison officer or any other body. These are some of the aspects worth considering deeply for giving a new impetus to the whole working of the Department while inegrating teaching, research and propaganda. And integration of research and propaganda as outlined will be far more beneficial and lead to better results than to put the specialists to waste their time which they are expected and ought to spend in useful research.

The future development of agriculture in this state, as is elsewhere, is bound up with the proper co-ordination of all the three aspects that will result by integrating them into one unit with proper liaison wherever necessary. We would suggest that there should be an autonomous organization of a comprehensive nature under which the various units can be engulfed. Such an organization may be styled as A. R. E. E. O. *(Agricultural Research Education, Extension Organization)* and under which the pre-professional, the under-graduate, the post-graduate and the various agricultural training personnel should be taught. Besides there should be scope for running regular but continuos refresher courses for the extension staff of a short duration from a month for the village level worker to three months for the district officers. This same organisation should be charged with the research activities pertaining to the State also. Thus, if in every State an organisation like the one mentioned is established, representatives from eaeh organization can meet at a central place to draw up a programe of work for the country as a whole and also take stock of achievements periodically. Many such machineries for the different fiields of science and technology may be set up and the final co-ordination can be effected by having an Academy of Sciences, in which only scientist of great reputation should be admitted. It may seem too idealistic or utopian, but some concerted action is wanted for achieving success and it is not difficult for a country like ours to succeed, for, remember, our freedom was won not by battles but by silent action and it is this ideal that should stir us to action, and action is achievement.