

A MODEL RESEARCH COUNCIL FOR AGRICULTURE IN SOUTH AFRICA

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A valid reason for my presence today is not easily found; but it may be that your society in a whimsical frame of mind deemed it could be amusing and perhaps worthwhile to hear what an ordinary layman might have to say upon a matter of national importance.

Fair enough. This is a unique opportunity for a layman to comment upon matters of great public interest at a time when reorganisation and change are the order of the day.

Let me say at once that the subject in hand is for me *solely an academic one*. Should my words at any stage be so badly chosen as to give offence, my apologies are now made, and sincerely, for no offence is intended nor fault apportioned to anyone.

For the purposes of this morning's discussion I shall select only those sections of my paper that have the most direct bearing upon our subject, namely, the blue print of a model Agricultural Research Council trimmed to the needs of the Republic of South Africa.

Under correction, a council in the context of agricultural science is at this moment an abstract concept. It exists in the imagination only.

To discuss the pros and cons of something existing in the imagination only would be both boring and unhelpful, especially for scientists who like to keep their feet on the ground as close to reality as possible.

Let me therefore stick to the realities of the problem so far as I am able, and these with your permission I propose to present in the form of questions rather than as statements of opinion from someone like myself.

The first question. What in your opinion should an Agricultural Research Council actually do, or be expected to do,

- (a) on behalf of the State that appoints it (and pays for it);
and (b) for the scientist who works under it?

The Second question.

Are the interests of the State and those of the scientist for all practical purposes identical? So similar in fact that it would be an easy exercise to draw up a blue print of an A.R.C. over which both State and scientist would readily find themselves in complete agreement? As Dr. Stutterheim has hinted so strongly State science, or any other for that matter, can only excel in fruitfulness when there is deep seated amity and understanding between administrator and research worker, a relationship dependent largely upon agreement in their answers to these two questions.

Be this as it may I am sure it would be possible to name 5 men, South Africans all, who, given the time, could present for approval by all interested parties a model A.R.C. that might well excel if implemented in this country. Only with such a proposal before us would it be possible to discuss in any meaningful way the truly vital pros and cons of the matter.

You will have noticed, Mr. President, that my address is directed to a model research council for agriculture, and not to an ideal one. For me ideals, like freedoms, exist in imagination only; models on the other hand, and in this context too, may take the form of a preliminary design or plan or arrangement capable of being put on display for criticism, amendment and perhaps even eventual majority approval.

To-day, Mr. President, may be an important date in the history of agricultural science in the R.S.A. It might well be that the time has come for a decision. Those involved in agricultural science, scientist or administrator or industrialist, must either adopt an attitude of *laissez faire*, concur in and support present arrangements for agricultural science, or they must set in motion a dedicated effort to collect incontrovertible evidence in favour of change, and the change in mind must be blueprinted and displayed.

Under correction, no such blueprint is to-day available. Is the present time therefore not exceptionally opportune to blueprint a concept of an A.R.C. trimmed to S.A. conditions, and so logically and lucidly compiled as to exclude all likelihood of dispute.

The blueprint must deal with, and in detail, such items *inter alia* as the following:

- (1) What activities fall within the scope of "agriculture?"
- (2) Which of these qualify for "state aided research?"
- (3) Upon what grounds should priority-rating for a state research grant be based?
- (4) What precisely should the model A.R.C. be expected to do?
- (5) Should the A.R.C. be concerned with, or involved in, all types of research, developmental, applied, and basic, in whatever agricultural activity such research is carried out?
- (6) The membership of Council, and the interests each member shall represent. Have you a suitable President in mind?
- (7) The Ministry under which it should fall.
- (8) Its relationship to the Scientific Advisory Council of the Prime Minister.
- (9) Its relationship to other Research Councils and agricultural organisations in general.

- (10) Its relationship to, and powers over, any agricultural research units, research institutes, or research organisations, presently controlled or directed by State Departments, Universities, or other bodies, receiving public or State grants for research purposes.
- (11) Its relationship to privately undertaken research in an agricultural context, e.g. by business concerns working in their own interests.
- (12) Its authority and autonomous discretion to set up new research projects or to terminate others already in existence.
- (13) its right to collaborate with other councils or research organisations with similar or overlapping interests and objectives, both here and abroad.
- (14) Its sources of income.
- (15) Its authority to adjudicate in matters of salary inside or outside the powers of intervention of the Civil Service Commission.
- (16) Its powers to pursue or renounce policies allegedly covering the agreed upon objectives of agricultural research in either national or political interests.
- (17) To whom should it give, and from whom receive, instructions sanctioned by Law.

These 17 questions are, for me at any rate, the crux of the matter. They are taken at random, and no doubt agricultural scientists and administrators could add any number of others of even greater significance. Quite obviously unless or until there is an overwhelming measure of unanimity amongst administrators and scientists on such questions as these, and this unanimity has been embodied in a blue print of a model A.R.C. for the Republic of South Africa, the State itself, i.e. the Government, could hardly be expected to display any active interest in the matter.

At this point it may be well to take a look briefly at what has been going on recently, both here and abroad, in the context of research councils in general and of agricultural research councils in particular. Firstly in South Africa.

Gist of previous addresses

For reasons of time let us confine ourselves to a few extracts from addresses already delivered to your society.

We will take Professor F.N. Bonsma first, a man whose opinions and witness cannot lightly be brushed aside. In his address Prof. Bonsma surveyed partly in detail and partly in broad outline the wide field of agricultural science in the R.S.A. He expressed his views sometimes directly and sometimes by implication. He posed two recommendations to resolve weaknesses in present practice.

The first recommendation is the establishment of a national advisory board to prevent unnecessary duplication of personnel or laboratory facilities in agricultural education or research. This board he said should arbitrate in disputes between individual state supported in-

stitutions over the appointment of, or claims to, research or teaching staff from among available and suitable material. This problem is incidentally a considerable headache overseas as well.

Secondly, he proposed the setting up of an agricultural research council, financed mainly by the State, but freely supplemented by monies derived from research contracts entered into with Industry, Market Boards, private enterprise etc. He makes no mention of income derived from contracts between State departments and the council in mind. Critical as he is of undesirable factors at times present in the atmosphere of civil science laboratories anywhere, Professor Bonsma nevertheless is strongly in favour of subsidized research in state run institutes and organisations.

But a successful relationship between the latter bodies and an agricultural research council is not specifically outlined and, indeed, may require either genius or immense good will to bring about.

Professor Bonsma postulates a council that in many ways resembles the present CSIR at Pretoria. A council such as this, but in an agricultural setting, with adequate autonomy, discretionary powers, and appropriate Treasury backing would he feels be able speedily to resolve most of the weaknesses in present state supported agricultural research practice.

But, and this is important, what Professor Bonsma has not yet done, and I think rightly so, is to offer for study a detailed blue print of the A.R.C. model he has in mind; nor has he, and I think rightly, as yet hinted at the exact relationship his A.R.C. should have with agricultural research administration in general.

Dr. I.W. McDonald of the CSIRO (Australia) is our next witness.

Since climate and veld conditions in Australia resemble ours in so many ways we are privileged in no small measure to have had Dr. McDonad's views on the matter in hand. He mentions and agrees with practically all of Prof. Bonsma's criticisms and deprecations. He lays particular stress upon such items as the following:

- (1) the absence of reliable data on which to recommend changes in present agricultural research practice and policy;
- (2) the inertia found in some agricultural institutions militating against reforms in research and organisation;
- (3) the effect of politics on industry and the perplexing finding that excess production due to oversuccessful research may prove to be economically unsound;
- (4) the strains that tend to arise between state departments in many countries over agricultural practice and policy;
- (5) the enormous cost of field experiments etc., etc.

Dr. McDonald informs us that in Australia as also in Britain, the USA, and Canada, no research policy at national level, covering all fields of research has as yet been agreed upon.

This is perhaps the case in South Africa as well. But

we do have a Scientific Advisory Council to the Prime Minister to deal with urgent problems in the national interest when they arise.

Dr. McDonald also in one of his remarks seemed to point the moral that in the battle for survival, in agriculture as elsewhere, heaven helps those who help themselves, notwithstanding that world knowledge is available to all who have the foresight, the intelligence and the energy to make use thereof.

In his second address Dr. McDonald drew our attention to the fact that South African Agricultural research scientists have not only added conspicuously to world knowledge in their field, but that they are also in very good standing in the scientific world abroad. He added *inter alia* that the best way of integrating cross-disciplinary research teams in pastoral research has not yet been resolved; that there should be no scientific brain drain from South Africa since our research talent being drawn from only 20% of the population is in consequence of exceptional importance; that pressure exerted by farmers upon research policy is not an advantage; that agricultural scientists are usually sufficiently well informed to give a lead in this respect.

In the matter of a research council, Dr. McDonald is in complete agreement with Prof. Bonsma. But he, like the latter, offers no detailed blueprint of the constitution powers, discretions, etc. of the model they each have in mind. One could almost infer from this omission that in his view the research arrangements in Australia are not only well worthy of study but perhaps even of imitation.

Dr. Nico Stutterheim is our next witness.

To me his full, free and frank comments upon how research councils should sponsor, direct, and control research, state aided or otherwise, are exceedingly impressive. They reflect deep insight into the material and spiritual problems of research workers in general but particularly in South Africa. Should Dr. Stutterheim's recipes be applied in any research laboratory or institute, nothing but improved work and increased happiness would result!

When in due course a model A.R.C. is put on display for consideration by Parliament, the spirit of Dr. Stutterheim's comments should somehow or other be incorporated into the text.

Dr. Stutterheim moreover endorses Dr. McDonald's favourable comments upon the success of our agricultural science under present and past administrative arrangements. They constitute a gentle warning that no change should be sought unless the motivation is both comprehensive and incontrovertible.

Some weeks ago I approached two senior agricultural scientists who have achieved much for science during their professional careers. Each in turn was asked whether in his view an agricultural research council along the lines of the Medical Research Council would be of benefit to the R.S.A. The younger after some thought replied, "Well, all I can tell you is this. It will be a very long time before an agricultural research council will be established in South Africa". Quite a daunting and revealing reply. The elder thought a while and said, "All I can say, and you are at

liberty to quote me, is that State funds, allocated to research in whatever field, are better administered by science-trained authorities outside rather than inside State departments".

Yet another scientist of distinction deeply involved in industrial research had this to say.

"State subsidized industrial research cannot flourish to the best advantage under civil service conditions. Industrial research requires direction and control by a body composed mainly of scientists, co-operating with economists and industrial experts, and operating outside State departmental administrative control".

Nothing said so far qualifies as argument for or against an agricultural research council. Pros and cons in the discussion of any proposal are meaningless until or unless an exact description of the proposal posed is identically pictured in the minds of all participants.

Industry and research

The story of the management of the South African economy since 1910 is not without interest.

Crudely stated small business developed into big business, became industries and expanded. State departments and service multiplied and grew.

By 1914 and World War I Parliament had become the managing director of a variety of business and public services. With the rapid increase in technological development and scientific knowhow, and the lessons gained from the war, by the nineteen twenties the government realised that prosperity lay in the relationship between good business on the one hand and the help offered by science on the other.

By the thirties General Smuts, himself a scientist, and much overseas, had grasped the need to provide local scientific research facilities to aid commerce and industry in all their ramifications.

The Prime minister, by the forties, along with leading industrialists, realised that heavily supported state science had become indispensable, and by 1945 the C.S.I.R. was established.

This specially designed research agency was placed at the disposal of state service or industry of any kind, and was made available to the private sector as well. Today any of the community may enter into contract with the C.S.I.R. to undertake research, at the discretion of council and under statutory safeguards.

The inference to be drawn from the advent of the C.S.I.R. is that, generally speaking, the government has in the past held the view that while business should be managed by experts in business, and science by scientists, the overall management of industry should flow from an amicable and honourable collaboration between two sets of experts, there being no misunderstanding as to who should be in charge of what.

In 1945 Agricultural Research was not included within the scope of C.S.I.R.'s obligatory activities, and it is the wisdom of this exclusion that is today partially under review.

The earliest significant doubts that I could find as to the wisdom of present arrangements for the conduct of State science in South Africa, were published in the 1964 report of Professor H.O. Mönnig, after a world tour of 11 developed countries. It is entitled "REPORT ON A STUDY OF SCIENTIFIC ORGANISATION". Professor Mönnig was at the time Chairman of the South African Science Advisory Council and Scientific Adviser to the Prime Minister.

This is an important and revealing document written by a distinguished South African with the needs of South African in mind.

The report describes the amazing complexity, diversity, range and number of scientific advisory and research councils in developed western countries, and has much to say about scientific management in general. Into his words may be read a strong recommendation that agricultural "science and research" management in this country is in urgent need of a new look by all concerned. They indicate endorsement of the view that in any industry requiring research to survive, the business side must be run by business men, and the research side by scientists, all working harmoniously to the desired end.

The Mönnig Report is sine qua non in regard to the matter in hand. It would be well to read it before tackling the flood of controversy raging today upon science management in Britain and elsewhere.

Let us now look at what is going on in Britain.

The British Agricultural Research Council

History has repeatedly forced upon us that South Africa, being but a small country and heavily beleaguered, is compelled by circumstance to stand on its own feet; that heaven helps those who help themselves; and that there is no easy road in planning and working for survival. The more one studies research councils, their constitution, policies, methodology, successes and failures, the clearer it becomes that there is no model to hand that will succeed in the RSA.

Take for example the British Agricultural Research Council. This council has been in existence since 1931. Amended and fortified from time to time, the present model, made legal in 1967, might be expected by now to have reached an enviable measure of stability, efficiency and success. Yet, oddly enough, this has not happened.

Many of you have read and are still reading the current flood of controversy and criticism that has arisen in the United Kingdom since the publication of the Rothschild and Dainton reports on research councils and the Medical, Agricultural, and Environmental Research Councils in particular.

Lord Rothschild, Chief Scientific Adviser to the British Government, in position similar to that of Dr. Meiring Naude in our own country, in his recent address on research councils in Britain does not mince his words. His "appraisal of research councils is sceptical to say the least". He "mocks at respected parts of the established world of science". He "insists that the time has come for radical

change in the way in which civil science is financed in Britain". He talks "of serious flaws in the organisation of research councils". "Government Departments are held to be less expert than they might be in dealing with modern problems by modern methods, because of the gap between science and state."

He disagrees with the expressed views of his predecessor, Sir (now Lord) Solly Zuckerman, that the Agricultural Research Council should be financed by the Ministry of Agriculture.

The question is raised whether research councils in agriculture and medicine should pursue a policy of setting up research units apart from Universities but unconnected with Government policy?

The relationship between the Agricultural Research Council and State Departments is an important issue. Indeed many of the problems touched on by both Rothschild and Dainton are old hat to administrators of State grants for research in this country. I doubt that there is a single point raised by Rothschild and Dainton that has not been discussed over and over again in both official and unofficial deliberations over the years at the CSIR at Pretoria.

Sir Frederick Dainton and his Committee take a rather sitting-on-the-fence or conciliatory line. They speak in favour of the continuation of co-ordinating and research councils, and against any drastic cut in their numbers. They seem to plead on behalf of scientists, but it is noteworthy that agricultural scientists until very recently, have hardly committed themselves on the issue. Public discussion is, however, rapidly gaining in force and volume.

Indeed since writing these words, the scientists in Britain have had much to say.

The two reports create a strong impression that all is not well in British civil science, and that the Agricultural Research Council in particular seems to be a model rather to study for its flaws than to copy for its merits.

Recent enquiry into agriculture in South Africa

The only inference to be drawn at this stage, Mr. President, is that although a number of steps in the direction of an A.R.C. for South Africa have already been taken, *much hard work remains to be done* before agriculturalists as a whole and this includes economists, industrialists and administrators could be persuaded that the setting up of an A.R.C. in the near future is of vital importance for the economic survival of this country.

In this connection I have now to touch upon a recent event of outstanding importance, namely the 3 Reports of the Commission of Enquiry into Agriculture, the 3rd of which has only very recently been handed to the Minister.

The findings and recommendations of this Commission are at the time of writing, 17.3.72, not available. But there is little doubt that the fate of agricultural science in this country is closely bound up with the actions that the Government in due course takes as the result of this Enquiry.

The terms of reference of the Commission seem to have covered all aspects of agricultural policy and practice, including presumably those of agricultural science and research. Indeed in the words of Dr. S.J. du Plessis, Agricultural Policy Adviser, the Commission was set up in 1966 to define inter alia "the basic principles for economic and biologically healthy agricultural systems in the Republic."

Since systems and practices embracing "biological-physical" principles are likely to fail unless the underlying basic principles are sound, it appears that the place and work of agricultural scientists must have featured largely in the deliberations of the Commission.

One cannot help wondering therefore just what evidence agricultural scientists may have laid before the Commission, and, specifically, what views they expressed in the context of an agricultural research council.

Indeed, my position at the moment is singularly awkward. Here I am initiating a discussion, how-be-it in a purely academic context, at a time when the Government may already be deciding what is best for agricultural science. There is just a hint however, in an article published in the *Farmers Weekly*, (17.3.72) that the part to be played by agricultural scientists has not yet been finally laid down. I refer to the statement by Dr. S.J. du Plessis that "it is recommended that a national advisory council for planning of agriculture be instituted"; and it is not unreasonable to suppose that the planning envisaged will include the role of the agricultural scientist.

If therefore, as seems possible, finality has not yet been reached in the planning of agriculture, our purely academic talk today may yet prove to be relevant.

The inference at any rate is clear. In all probability nothing much in the context of agricultural policy will happen until the Minister has had time to digest the Commission's Reports, and the Government has decided whether or not to appoint the 'national advisory council' that has been recommended.

Should this council come into being there is little doubt that it will, in due course, advise the State upon the desirability or otherwise of an autonomous A.R.C., perhaps along the lines of the present recently inaugurated Medical Research Council of South Africa, but suitably adjusted to the agricultural predicament.

But this does not mean that scientists and administrators should forthwith cease to work upon a blue-printed model A.R.C. On the contrary, the present moment is opportune to deal lucidly and in detail with every aspect of the matter, so that if and when the national advisory council takes its seat for the first time, your blue print and recommendations, in the interests of national survival, will be high upon their agenda.

Before our Chairman declares the meeting open for discussion, may I bring to your attention certain facts that are not without relevance. I refer to the monies allocated by Treasury in the various fields of science as set out in C.S.I.R. Report No. 288 entitled "Expenditure on research and development in the natural sciences in South Africa during the calendar year 1966 and the fi-

nancial year 1966/67".

The figures that follow are those quoted for the year 1966/67:

Expenditure in Government sector on Applied research and development for *Agriculture, forestry & fisheries* is given as R10,000,000 +

Expenditure in Government sector on *Health* is given as R625,000 +

Expenditure on Basic and Applied research in Government sector on *Biology, Agriculture and Forestry* is given as ± R8,000,000.

Expenditure on Basic and Applied research in Government sector on *Medical Sciences* is given as R1,130,399.

But of this sum R831,187 was allocated to Veterinary Science and R197,396 expended on Human medicine.

The exact figures evade me; but whatever they are there is little doubt that State subsidy for agricultural science in 1966/67 was of the order of 10 millions or more, while that for science in human medicine was probably considerably less than 2 million rand p.a.

Now, when any State makes grants for research, it automatically imposes upon itself an obligation to ensure that the grants are so effectively directed, and so well administered that the results justify the expenditure, and that all undeniable priorities are covered. Presumably this is a matter that has received much attention from the Commission of Enquiry into Agriculture (1966-71) that has just tabled its Report. But, to refer to the figures quoted above, it does seem odd at first glance that basic and applied research in one field costing the state less than 2 million rand p.a. should require a research council to administer the subsidy expertly, while another field of research costing the state 5 times as much does apparently not qualify for a similar council of experts to administer and supervise. Should 10 millions p.a. spent in one field of science not in logic qualify 5 times more urgently for expert guidance and control than 2 million p.a. spent in another?

I have no doubt that the reasons for the apparent anomaly are perfectly straight forward and sound.

The figures are mentioned because they are interesting and reveal the immense overall importance of agriculture and agricultural science and research in the national economy and survival.

Finally, Mr. President, I have only one further comment to make, arising out of personal experience of research councils in general, and it is this.

Statutory research councils come about usually in one of two ways. Either they are imposed from above or they are requested from below.

When imposed from above they express a wish fulfilment on the part of the State that public monies allocated for research should be administered by experts in order to ensure co-ordination, efficiency and a maximal fruitfulness.

When requested from below, the request generally

comes from scientists themselves, who, being intimately involved and well informed, are asking that executive authority be entrusted to them in the spending of such research grants as the State may allocate. They are in fact asking to be put on their honour.

Research councils, furthermore, may be either advisory, or executive or both. Councils with executive powers commit themselves to action, learn from their mistakes, and their honour is at stake. They are respected or despised according to the fruits of action for which they themselves are alone responsible.

Advisory councils on the other hand have little or no real responsibility. The latter devolves rather upon the executive authority at whose discretion the advice given is accepted or rejected. Advisory councils therefore are open to deep frustration when their advice is neither taken nor can be forced to be taken.

If I personally were to commit myself as to the type of industrial research council that is most likely to prove effective in our South African predicament, I would choose a statutory autonomous research council, composed mainly of experienced experts with a scientific background, along with a sprinkling of economists, administrators and industrialists, very much along the lines of the C.S.I.R., the whole entrusted with strong executive powers, and responsible at all times for informed advice to the hierarchy.

In conclusion, Mr. President, I have not dealt with those sections of my paper that concern inter alia the origins and history of the Medical Research Council, the scientific brain drain, or the priorities of State expenditure. But I trust enough has been said to stimulate the sort of discussion that makes inadequate addresses of this kind worthwhile.

Sections not read at the conference

History of the Medical Research Council

Let it be assumed that agricultural leadership in South Africa has decided to improve upon present arrangements for the conduct of agricultural science, and to set up a body of experts to co-ordinate and organise agricultural research in a manner trimmed to the needs of the Republic.

Would, one wonders, the events leading to the setting up of the above Council have any relevance, or be of any interest, in an agricultural context.

Be this as it may, the events leading to a Medical Research Council were roughly as follows:

State aid for selected medical research projects has been customary for well over 100 years. But outstanding research with little state aid has also been performed during this time. To mention but two examples; firstly, work internationally acclaimed and carried out at the South African Institute of Medical Research in Johannesburg; and secondly, that of another famous laboratory, the Human Sciences Laboratory of the Chamber of Mines, where unique research upon healthy human material, under-

taken to make work possible at immense depths underground, has not only been carried out without injury to man, but has contributed enormously to the national economy by enhancing the productivity of the gold mines.

It was, under correction, not until the early forties, towards the end of World War II, that the first steps were taken with an autonomous 'medical research council' in mind.

At this time General J.C. Smuts in consultation with Dr. Von Eck and other industrialists had become convinced that South Africa needed a science council to administer state grants for scientific research along the lines currently in force overseas. He called upon Professor B.F.J. Schonland, (now Sir Basil), a distinguished physicist and soldier, to go into the matter. It was then that one first heard of Schonland's idea of setting up an independent medical research organisation but in close liaison with the council that he envisaged would take care of state grants for general science.

In the event, the CSIR was established in 1945, and medical research was administered within the framework of the CSIR in a privileged position directly under the aegis of the President himself.

In 1954 the du Toit Committee of Enquiry into the Co-ordination of Medical Research in South Africa was set up. About a year later it made a number of recommendations, the upshot of which was that state aided medical science remained within the framework of the CSIR, under the direction of a Committee for Research in the Medical Sciences, (C.R.M.S.)

By 1967, after some years of official and unofficial discussion, C.R.M.S. itself decided to endorse the action of the Committee on Medical Sciences of the Scientific Advisory Council in its approach to the Government for the establishment of an independent Medical Research Council. Some 4 years later, in 1971, the Council was inaugurated at its new headquarters building in Cape Town. The decision of the medicals to leave their exceptionally kindly and encouraging home in CSIR flowed as much as anything from a hope or belief that an autonomous council would be able to draw more money from Treasury than had previously been possible.

It was the harmonious work and the measure of success of this committee over the years that encouraged the request for the higher status of a Research Council in its own right.

Some 30 years had thus elapsed from the time that an M.R.C. was first mooted to the date of its implementation.

In passing it is worth noting that not only was the Secretary for Health himself a member of the du Toit Committee of Enquiry, but that State Health, the CSIR, and such independent research foundations as the South African Institute of Medical Research, the Polio Research Foundation, the Pneumoconiosis Research Unit, the Human Sciences Laboratory of the Chamber of Mines, and medical research participants at Universities, had at all times collaborated in close liaison in matters of common interest. What points of difference arose from time to time were

amicably dealt with, and are now, one would say, completely covered by the terms of reference of the newly established Medical Research Council.

It is not impossible that the wording of the Bill placed before Parliament by the Minister of Planning may be of interest to agriculturalists should they in due course have an A.R.C. in mind.

What is of special interest in this context is the fact that unlike the CSIR the M.R.C. was requested from below and not imposed from above.

One further point. In medical science and research it is the scientists concerned in doing original research who are mainly interested in the administration of state grants. Medical practitioners in the mass play little part in research policy.

In agriculture on the other hand scientists involved in original work are part and parcel of a vast and complex industry, each section of which has to collaborate with every other section for the common good.

If scientists in any sector contend that their contribution, an indispensable one, could be enhanced through a research council rather than under present arrangements, such contention is of national importance and must be taken seriously; but it must be supported by incontrovertible data in a dignified and logical manner.

Comments on the braindrain

Other evidence worthy of note in the context of today's discussion concerns the origins of the braindrain, a problem prevalent in this country as in any other. I refer to the attitude of mind of the younger groups of talented scientists the world over.

Young men and women of proved ability and conspicuous promise, but with their academic careers still largely ahead and their final domiciliary choice not yet made, subconsciously and at times overtly, hanker to be liberated from a distasteful 'compulsion' to keep looking over their shoulders at enticing opportunities elsewhere or even abroad.

It is not so much that they despair of their present environment as that they fear desirable changes may take a long time to come — too long for them to wait. All scientists moreover, and this is universally true, have an inner urge to be judged by their peers when administrative restrictions have to be imposed, and particularly so when

these restrictions affect the quality of potential of the researches they are enthusiastic to undertake. Ofttimes such restrictions are unavoidable because of circumstances over which the State itself has no control. This is as true in agriculture as elsewhere.

Priorities in State expenditure

A brief word about priorities in state expenditure.

Calling to mind the passionate urgencies advanced by this Ministry or that when asking for what they regard as a proper allocation from national income, one cannot but be sorry for those who have to make the final decision.

The point is this. South Africa is a small and threatened country whose highest priority is survival. What goes on behind Treasury doors is secret. But there can be little doubt that those obligated to scrutiny of State expenditure in the public interest are motivated more by the requirements of internal security, external defence, education, industry, and commerce in general, than by the less tangible claims of the Arts and the Sciences.

It is for this reason that if a suggestion to establish a research council in the context of agriculture is to be favourably received by the State, the argument for its implementation must rest upon both scientific and economic considerations, but not upon the former alone.

Conclusion

The drawing up of any blueprint of an A.R.C. model for this country must be the result of an overwhelming majority opinion flowing from close consultation and liaison between agricultural scientists, agricultural faculties, and agricultural research administration. Their work must be characterised in some measure by high scientific idealism if you like, but it is the plain horse sense in their arguments that will win the day.

This difficult and exacting task completed, the next step one imagines should be aimed at the Scientific Advisory Council of the Prime Minister. Strong sympathy and support here would, it is believed, bring about a Committee or Commission of Enquiry, with suitable terms of reference.

A strong recommendation from this body would almost certainly bring about in due course those reforms in agricultural science that there is good reason to think are both indispensable and urgent to our national survival.