

# SCIENCE AND INDUSTRY

## IMPORTANT PROPOSALS.

### SIR FRANK HEATH'S RECOMMENDATIONS.

Sir Frank Heath has made important recommendations for the re-organisation of the Science Institute, with the object of applying the link between the Science and Industry. He proposed a system of Commonwealth and State control, and co-operation with similar bodies, as in England. The cost would be £40,000 for the first year, rising by degrees to a maximum of £100,000 annually.

The Prime Minister (Mr. Bruce) yesterday released for publication the recommendations made by Sir Frank Heath for the reconstitution of the Commonwealth Institute of Science and Industry.

#### The Main Functions.

Sir Frank recommends that the amending Bill for establishing the Government in the Governor-General's Speech should define the purpose of the reorganised institute as follows:—(1) It should provide for the training of young men and women in scientific research, and for the encouragement of research workers who have already shown special capacity for original work. (2) It should be responsible for the conduct of scientific investigations into such of the world's industrial resources as, whether primary or secondary, are available to Australia, and to assist consumers as well. (3) It should assist under suitable conditions the solution of scientific problems of importance to particular States or groups of States, which though urgent in themselves, do not affect the whole Dominion.

The main functions three subordinate duties should be added:—(1) It should act as a clearing house of information on all subjects affecting the industries of the country. (2) It should be the principal and official means of liaison between the Governments of the Commonwealth and those of the States, and the other parts of the Empire in scientific matters. (3) It should become, as it was in the case of the world's industry, the centre in Australia, the adviser and the Government on the scientific aspects of policy.

The Institute should consist of the responsible Minister, and the Advisory Council to the Minister. The Council should consist of a chairman and eight members. All proposals for the initiation of new researches, before they are undertaken, should be referred to the advisory council for consideration in their scientific aspect. The advisory Council may itself initiate proposals for the conduct of or assistance in researches.

The executive committee shall have power to exercise all the powers of the advisory council in the intervals between its ordinary meetings.

#### State Committees.

Each State should be invited to nominate a State advisory committee, whose duty it will be to advise the Minister, and the advisory council for aid from the institute towards the conduct of scientific researches or investigations bearing upon the interests of the State. It will be the duty of a State Advisory Committee to exercise a general supervision over all the researches conducted in the State and to disburse the funds (both central and local) provided to meet their cost.

Two or more State Advisory Committees may combine and agree to research or to exercise through a joint committee general supervision of any investigations.

A State Advisory Committee shall include two members to be nominated by the State Government, from among their own scientific staffs, two to be nominated by the State University, to be nominated by the National Research Council, and two representatives of the State's industries. The State to be nominated as the industries may determine in consultation with the responsible Minister.

#### Institution.

The Institute shall establish under the charge of special scientific officers:—

An agricultural section, attached to the Department of Agriculture, to be formed a Dairy Research Institute.

#### A food section.

A forestry and forest products section.

#### A fisheries section.

Such other special sections as the Government may from time to time determine.

To his recommendations Sir Frank has appended notes regarding them. He points out that it is obvious that such a system of Commonwealth in scientific work must depend upon the existence in the Dominion of a staff of scientific workers, and that, in order to bring on national lines co-operating with all promising and efficient agencies in the several States, and to give information and action in all matters in which co-operation between the two nations is likely to be beneficial. It is for these reasons that for a variety of reasons the present Institute has not been able to fulfil all the hopes of its founders.

It is in the light of past experience and of present needs that the purpose of the Prime Minister has in view. It should be to secure the best light of past experience and of present needs that the purpose of the Prime Minister has in view. It should be to secure the best light of past experience and of present needs that the purpose of the Prime Minister has in view.

In regard to the training of young scientific workers in research, and the encouragement of independent workers, Sir Frank points out that every year in Australia promising and useful work is going on, and that while lack of funds was a handicap, the State is not responsible for the work of scientific research. Australian Universities were turning out men in larger numbers than could be absorbed in suitable occupations, but these young graduates, however well equipped in existing knowledge, could not be expected to keep abreast of the progress of science, which had been trained in the methods of scientific investigation. But if the duties of the new organisation were to include opening up permanent employment will be available in connection with the researches it assists, while in time products of the Australian soil, which are not in Britain, will offer appointments to well-trained men capable of undertaking researches of great value.

Sir Frank counsels the Government that in the interests of science, as well as of finance, it is better not to begin an investment in the sciences until the staff is well equipped. The first requirement is to find well-equipped leaders. It is better to have a few first-class men than a large number of second-rate men. The first requirement is to find well-equipped leaders. It is better to have a few first-class men than a large number of second-rate men.

Sir Frank is of opinion that investigations for the encouragement, stimulation and assistance of institutions of interest to particular States or groups of States, should be initiated by the States concerned, though the Commonwealth organisation should assist in the carrying out of the work. As the number of proposals coming forward will no doubt exceed the initial capacity of the country, the Government should determine the method to be placed the subjects in order of priority, to determine the minimum scale on which the work can be carried out, and should determine the proportion of the total capital, the annual cost for which the grant shall be made. One of the kinds of activity the investigations now going on in regard to prickly pear, bunched figs, and other pests, and other kinds of viticultural problems at Mildura.

"I would add," says Sir Frank, "that the detailed list of functions assigned to the Institute by the Government is so wide as to limit the proper powers of the Institute by over definition at a period of its growth. It is better to have a wide and industrial research is constantly receiving a wider interpretation as its powers and possibilities become better appreciated. On the other hand, certain powers assigned under the Act and not contained in the list of scientific bodies, but in their nature be the subject of agreement between manufacturers and consumers, and the scientific apparatus (other than scientific apparatus) machinery, materials, and instruments (including scientific instruments) used in industry."

#### Centralised Control.

Sir Frank Heath points out that while the Government has a right to exercise a highly centralised control, there is in democratic communities in normal times an impulse of one-man control—an impulse which is not necessarily a bad thing. The activities of the organisation must operate within the boundaries and for the benefit of the Dominion as a whole. If it is to be successful it must secure the active co-operation of those States and their people. The basis of the proposed organisation, therefore, should be a co-operation of all the States with the Commonwealth in the formulation of a policy through which the Institute should be a responsible position and wide outlook. The vast distances in Australia and the wide range of climatic conditions require a decentralisation which will undoubtedly involve greater delay in reaching decisions than would be the case if the country were more closely populated country. The responsibilities placed by these recommendations upon the Government would be continuous and important, but they are of a kind that should be undertaken by a Government. In selecting suitable men for the three important posts of the Institute, the Commonwealth representatives the first Commonwealth representative suggested names should be the certainty

of the public confidence in the work of the Institute. It is suggested that the persons selected by the Commonwealth Government should be men of high scientific attainments, their scientific training and knowledge to form a considered judgment on as many of the matters of the Advisory Council as possible.

In view of the importance and responsibility of the duties suggested for the Institute, it is suggested that the men they should each receive a substantial honorarium of £200 a year for their services. It is suggested that the men of the first rank in their respective fields of work cannot be expected to devote their time and energies over to the service of the State in circumstances that can bring them neither personal nor pecuniary advantage. It is appreciated when the help of lawyers or doctors is called for. It is no less necessary in the field of science. In addition, it is recommended that travelling expenses and subsistence allowance at appropriate rates should be granted to all members of the Institute attending meetings or travelling at the request of the Institute.

#### Agricultural Section.

The State secretaries should be scientifically trained men, well acquainted with local conditions, the work being done and the difficulties in the way of progress. The investigators should also be men of high scientific attainments, capable of assisting the technical officers, including the laboratory officers, by keeping in close touch with the work of the Institute.

Sir Frank stresses the necessity for the establishment of a Bureau of Agriculture. One of the first functions undertaken by the Institute should be to establish a Research Institute, as in Australia, less scientific work has been done in connection with agriculture than in any other part of the world. Notwithstanding the fact that during the last five years dairying in bulk production has expanded in Victoria, and in Queensland, and in the Dairy Institute, Sir Frank thinks should be established in Victoria, as well as in the fruits and dairies. The food section might be located in Queensland, the fuel work in New South Wales, the silviculture work in Western Australia, the products of the Cambera, the minor forest products, e.g., tannin, resins, and wool pulp at Adelaide, a division for the study of the forest industry, being the largest export of timber is made, and the greatest losses from waste experienced, and a division for the study of the fisheries in Queensland. Fisheries research might be centred in Tasmania.

There is necessity for particular attention to be paid to the forestry and agriculture more cheaply-produced wood. Research into forest products should be based on the experience of the timber man, the engineer, or the chemist. Australia should not only be entirely self-sustained in timber, but be a large exporter.

Sir Frank Heath returns to the necessity of treating an adequate supply of training efficient research workers in Australia is the inadequate supply of such workers rather than to the training of such workers. It is of the utmost importance to place the training of promising workers and the stimulation of those already available, not merely by providing the training, but to do it so far as is possible from the child stage that ten years or other cause may bring to the attention of the Government. If the fund recommended is established, he believes the example set by the Government will attract gifts from private benefactors, and will be a fine thing. In conclusion, he makes the observation that the new organisation, if it is established would be a fine thing. In conclusion, he makes the observation that the new organisation, if it is established would be a fine thing.

#### Imperial Government's Offer.

The British Government has already offered to throw open the Department of Scientific and Industrial Research, and the Ministry of Agriculture to young Australians, and to invite the Commonwealth Government to members of the staff of their own research stations. They will have the opportunity as members of the staff to be employed in a manner in which scientific problems are being attacked at home, and of taking part in their solution. It is suggested that four men should be sent home as soon as possible to prepare to become a nucleus staff for Australia. A similar course should be followed in forestry and forest products research, and in fisheries research. The British scientific workers should have the opportunity for similar privileges in Australia as soon as research establishments are available in those fields.

Finally, he suggested for the consideration of the Federal Government, the establishment of a scientific post, to be filled by a well-qualified man, who would have duties of a general nature, and to be a centre of progress and policy. The recent creation of the Civil Research Commission of the British cabinet as the civil research commission, and the fact that the Defence appears to make such a post particularly necessary. The officer would be expected to become a member of the

the work and personnel of the research stations and laboratories at home, and would be able to supply Australia with the best scientific staff available to advise his Government as to the best source for expert advice when advice is needed, and to act as a liaison between a nation of the Commonwealth and the more formal action. After occupying this post for a couple of years, the officer in question would be transferred to Australia to secure tenets to one or other of the secretaries of the State Advisory Commission, who would take his place in London. It is suggested that the scientific liaison officer would gradually become personally acquainted with the work going on in the several States, and to be able to act as a liaison between the research work and authorities at home. Sir Frank estimates that the cost would be £40,000 for the first full year, rising to about £50,000 in the second year, and probably £100,000 in the third to a maximum of £100,000 annually.

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SCIENCE AND INDUSTRY.

The Federal Government has long been in the act of following the recommendations of Sir Frank Heath with regard to the reorganisation of the Institute of Science and Industry. The application of science to industry, both primary and secondary, is of special importance to Australia, and, indeed, next to a larger population, may be ranked as its greatest need. But to achieve its full effect without waste of effort or money it must be decentralised, a point on which the secretary of the Department of Scientific and Industrial Research in Great Britain, in his report to the Commonwealth authorities, laid immense stress. It is not merely that a highly centralised control is repugnant to the democratic spirit in a country of such "immense distances" such control carries with it obvious disadvantages, especially when, like Australia, that country includes a wide range of climates and an extremely varied assortment of products. A measure of decentralisation there must be in order that energy and expenditure may be properly directed and overlapping avoided; but the real work of research must be done where the natural facilities for it exist, and where there is the greatest local interest in the problems to be solved.

As announced by Mr. Bruce in his speech at the Sydney Show last week, the Government are preparing a Bill to give general effect to Sir Frank Heath's recommendations. The place of Director of the Science Institute will be taken over by an advisory council subject to the responsible Minister, and consisting of a chairman and eight members. The Institute will act as a clearing house of information on all matters affecting the industries of the country; its sanction will be required for the initiation of new researches, while it may initiate proposals of its own; it will act as a liaison between the States, and between the Commonwealth and the scientific world overseas, and will advise the Government in matters of policy, where science is concerned. (Of the nine members of the council six (one from each State) will be members of advisory committees, the establishment of which is an essential feature of the Ministerial plan, as it was of that of Sir Frank Heath. These committees will supervise the research work in respect to which money, from a fund to be administered by a trust, is expended in the various States. The fund will consist of contributions from the Commonwealth and the States and from public-spirited citizens may donate or bequeath. The Institute thus reorganised will co-operate with the Universities and the public departments where any kind of scientific work is done. There will be a regional distribution of research work, and if Sir Frank Heath's plan is followed South Australia will have assigned to it investigations in connection with minor forest products like tannin, resins, and wool pulp, Western Australia wood problems, Tasmania fisheries, Queensland products affecting meat, Western Australia fruit and New South