

Europe has constantly led the Americas in work in this field. The reason, according to men who have studied the matter, is that there are more highly trained men of leisure in Europe than there are in this country. I listened to a discussion on how pure science could best be advanced in this country, in which it was suggested that if well-trained university men were put on a pension of \$12,000 a year, with the undertaking that if they would care to spend any of that \$12,000—they would spend their time as they liked—on any particular line of research, such expenditures would be added to by the state in the proportion of three to one. These highly trained men would be assigned no particular task. They would be on pension and they could do as they liked. If they cared to take up any particular line of research, their expenditure in that work would be supplemented. By such means it might be possible to develop scientifically trained men of leisure who could be expected to contribute discoveries in pure science. I am simply throwing that out to explain why the national research council does not primarily organize research work in the field of pure science.

Mr. MacNICOL: Would the minister permit a question?

Mr. HOWE: Yes.

Mr. MacNICOL: Not having a thorough understanding of the men of Europe to whom the minister refers, may I ask if the developments over there were brought about on their own initiative, or organized by some government?

Mr. HOWE: On their own initiative, for the most part.

Mr. MacNICOL: That is the difference between a man working on his own initiative and working under government auspices. The men of whom the minister is speaking who may be paid \$12,000 a year would be working under the government. Men of that type have not the initiative. Not having that initiative, they would not rate one, two, three with the men who are working under their own initiative. That is the difference between private initiative and government control.

Mr. HOWE: I hardly suggest that a large income is a necessary corollary of ability. My hon. friend will find that in the field of pure science discoveries have been made not so much by men of wealth, as by men of leisure. Certainly Sir Alexander Fleming was not a wealthy man when he undertook to discover what was happening to his cultures, what

[Mr. Howe.]

caused them to die when he left them by an open window. It is a fact that in Europe there has been a leisured class of men trained in science. In this country we expect men trained in science to buckle down and be producers. Perhaps that is the reason why this continent does not advance as rapidly in the field of pure science as do the older countries.

At six o'clock the house took recess.

### After Recess

The house resumed at eight o'clock.

Mr. HOWE: Mr. Speaker, to continue my remarks before the hour of recess, I would refer to the comment on the permission sought in the bill to build pilot plants. In the past, the national research council has taken the view that its duty was to work out the scientific process, and leave the actual development work to others. It has been found, however, that, in some cases, the proving of the scientific work by means of a pilot plant is necessary to carry out the objectives of the national research council.

In explanation, I would refer to the Dominion Magnesium plant, and in doing so I shall carry out my promise to the hon. member for Davenport (Mr. MacNicol) to explain the position of that plant.

In 1937, experimental work on the production of metallic magnesium was initiated by the division of chemistry of the national research council under the direction of Doctor L. M. Pidgeon.

Until 1939, this research was largely confined to the established electrolytic methods when work was started on thermal reduction methods, or what later became known as the Pidgeon process, which uses the reaction taking place between calcined dolomite and ferrosilicon.

At the close of 1940 the situation was as follows:

(a) The national research council had financed work on the production of metallic magnesium through the reduction of dolomite by ferrosilicon, at a total cost of approximately \$22,000. At this stage no patentable discovery had been made.

(b) It had been demonstrated that magnesium could be produced by this process on a laboratory scale, but it was not known whether it was practicable successfully to expand the laboratory retort to a commercial plant size, and it was realized that this involved problems of more than ordinary difficulty.

(c) The council had discontinued investigations on this process as the questions indicated in (b) above could only be answered by