of the principles that will guide us in attaining the end for which we are working, that I have chosen this as the subject of my address this evening. I will endeavour to indicate, somewhat briefly I am afraid, a few of the problems which depend for their solution upon the results of biological investigation. As His Excellency Earl Grey truly said in his address to the Conservation Commission on the occasion of its first meeting: "The future well-being of Canada depends upon the loyal acceptance by its people of the principles which aim at the profitable and scientific development and conservation of your natural resources. I recognize that the future prosperity of Canada depends upon scientific research and upon the efficient application of the results of that research to the industrial and physical life of the people."

We must take a broad view and regard the problem from its æsthetic and ethical side as well as from its practical. We are a practical nation, but there is a growing danger that success and material prosperity may be taken as synonymous with, and as the criterion of, a national happiness, than which there is no mistake more profoundly erroneous.

## THE SOIL.

The greatest need of man is food, and his food, directly or indirectly, is a product of the soil. On the producing power of the soil, therefore, the lives of the people as well as the future existence of the nation depend. It will be understood then how important a question the conservation of this great producing power, the fertility of the soil, is to so essentially an agricultural nation as Canada. The supply of the organic constituents of the food of plants is inexhaustible, but this is not the case with the inorganic chemical constituents of the plant food—nitrogen, potassium and phosphorous: and when we speak of the conservation of the essential elements of the soil we refer to these elements, of which the most important is nitrogen. Since 1660 this element has been regarded as one of the sources of the fertility of the soil, and after many years of careful inquiry we have come to the conclusion that the fertility of the soil can be attributed to no one cause: nevertheless, the available nitrogen is one of the chief factors in this fertility. It will naturally be inferred that this is a question of a chemical nature which does not concern the biologist. The day has passed when one branch of science can stand aloof from the rest, as the history of the present problem will indicate. In 1886, Hellreigel and Wilfarth discovered that the nodular growths found on the roots of the leguminous plants, such as peas, clover, alfalfa, etc., contained bacteria which were capable of drawing nitrogen from that large reservoir of other-