ciating the camphor tree with its close ally, the cinnamon (*Cinnamomum zeylanicum*), are inclined to regard camphor as a product of tropical, or at any rate distinctly hot, countries. As a matter of fact, it is rather a plant for subtropical and warm temperate regions, and it is noteworthy that Mr. H. N. Ridley, F.R.S., in a recent number of the *Agricultural Bulletin of the Straits Settlements and Federated Malay States*, records that the finest camphor tree he has ever seen outside Japan was one growing near Fowey, in Cornwall. The tree thrives in many parts of Italy, where the average yield of camphor from green leaves is given by Prof. Giglioli as 1.20 per cent., which is very similar to that obtained in Ceylon, and considered sufficient for commercial purposes.

Prof. Giglioli enters fully into the history of camphor, its cultivation in various parts of the world, describes the mode of extraction and preparation of the product, shows by chemical and industrial tests that camphor of good quality can be produced in Italy, and is of opinion that a successful industry there is quite feasible. Finally, it is worth noting that the book has as footnotes and in a special appendix very full bibliographic references to all aspects of the subject.

W. G. FREEMAN.

POPULAR GARDENING.

Garden Rockery: How to Make, Plant, and Manage it. By F. G. Heath. Pp. vi+173. (London: George Routledge and Sons, Ltd., 1908.) Price 1s.

THE object of this popularly-written book is frankly stated by the author in the preface as "to show the worn and worried man, or woman, of business how to obtain a maximum of enjoyment with a minimum of preliminary attention and consideration." It appears to be an attempt to induce those who have but little time, or inclination, for gardening, to take up a branch of that art which in our opinion demands sympathetic treatment and constant ungrudging attention to small details of cultivation.

We sympathise with any efforts that are made to popularise gardening, but it is to be feared that the contempt for high cultivation expressed in many of the author's remarks is scarcely likely to be helpful to those who may be desirous of maintaining their rockeries in a condition that will afford most pleasure to their owners. Eden may, or may not, have "yielded food and fruit not, at any rate, inferior in quality to that of our own times," but whatever may be the truth in regard to such a statement, we feel sure that, with very few exceptions, the fruits of the earth, as we know them, are much improved by cultivation, including in this term the processes of cross-breeding and selection of varieties. But the author declaims against the "vicious practice" of developing single into double flowers, or of making the naturally white flower blue, red or yellow.

"Nature's variations in form and colour," he says, "are endless, and should suffice for the most exacting horticultural taste, without the display of cunning efforts to alter her wise disposition of form and colour."

All this, it would appear, has little to do with the making or planting of rockeries, but this book discusses such questions before asking in the third chapter "What is Rockery?" Subsequent chapters give directions as to what materials to use in the formation of a rockery, and describe how rocks are generally seen in a state of nature, whether of volcanic origin or the result of the "weathering" of exposed rocks.

A list of British ferns is given, and some of the commoner flowering plants that may be cultivated on rockeries, and the text is relieved with forty-five illustrations which have been reproduced from photographs. There are several mis-spellings in the lists, and whilst many of the terminations of the specific names appear to have been purposely brought into conformity with the recommendations of the Vienna Conference, there is no consistency in this matter.

In one of these lists *Linaria cymbalaria* is described as growing 3 inches high, but upon a rockery it is surely more useful for this species to trail 24 inches. The author speaks of *Primula vulgaris* as the wild plant, and suggests that it is the progenitor of such species as *P. farinosa*, *P. scotica*, *P. floribunda*, *P. auricula*, and others, but these plants are just as wild as *P. vulgaris*, and we are unable to discover the evidence upon which the author bases his deduction. Of *Linnaea borealis* (mis-spelt *Linnea*) the author timidly states that it is believed this plant was named after Linnæus, because it was understood to be a favourite plant of his! The plant was undoubtedly named by Gronovius, not only after the great botanist, but at his request.

FLOREAT CANADA!

Canada's Fertile Northland. Evidence heard before a Select Committee of the Senate of Canada, 1906-7. Edited by Captain E. J. Chambers. Pp. 140; with illustrations and a volume of maps. (Ottawa: Government Printing Bureau, 1908.)

WITH characteristic foresight, the Government of Canada has collected such information as is available regarding the possibilities of the northern regions of the dominion as a field for immigration. The title of these cloth-bound volumes is attractive, and certainly optimistic. The evidence of those who know the country, given with simple directness, does not emphasise its fertility, and it soon becomes obvious that a large part of the 1,637,550 square miles discussed has emerged so recently from the Glacial epoch that soils have only just begun to form. It is fair to add that a very large part remains unsurveyed and unprospected.

The handsome maps provided record geographical advances made in quite recent times, and there are still some inviting areas worthy of a Sven Hedin or a Nansen, skilled in the lore of stream and forest. For the agriculturist there are many assurances that potatoes are not cut off by frosts in summer; but the raising of wheat is naturally more precarious. Mr. Tyrrell (pp. 89-93) describes a forest-belt south-west of Hudson's Bay as suitable for agriculture, owing to the warm bright summers. "The snow

leaves the ground in May, . . . and the frost does not appear in the fall until about September 20." Mr. F. S. Lawrence's experiences with wheat in the Peace River country (latitude $58\frac{1}{2}^{\circ}$ N.) provide valuable information (pp. 101-105). Spring wheat has fully matured here in eighty-six days. The word "muskeg" is used freely by witnesses, and is not very lucidly explained on p. 123; it appears to be a poor wet kind of soil, which may be as much as 6 feet in depth, and is generally to be avoided.

The simple and unvarnished statements of the various witnesses furnish a manly contrast with the prospectuses of company-promoters, and from them we gather that timber and minerals will probably form the main attraction for new settlers. The evidence of Mr. A. von Hamerstein (pp. 36-43) is full of delightful touches. Like Mr. Lawrence, he speaks highly of the Peace River valley, but remarks sadly of the climate of the Athabaska district:—"They say it may change, but up to this time it has not changed." He mentions places where small areas of good soil occur, but says that at Fort Chipewyan "a little garden stuff is raised, on soil brought there by the Sisters in pails." His account of the moral defects of the wolverine, among which is an objection to taking poison, should delight the naturalist. This animal has hung behind in the march of evolution, for "the horse and other animals have developed, but the wolverine has kept his original shape."

We close the book with renewed admiration for those who are engaged in making Canada. There is to be no "boom"; no hardships are to be concealed; the settler is invited to follow the trapper and the Indian, and to see if he can make more out of this enormous tract than they have done. In latitudes below those of Stockholm and the Orkneys, or even as far south as Belfast or Newcastle-upon-Tyne, he is called on to meet the rigours of a continental winter. But he is encouraged by diagrams showing the length of summer days and the shortness of summer nights, themselves as starless as the days; and the cover that encloses so much plain speaking is labelled "Canada's Fertile Northland." Success should surely come to those who have this high faith, and tell no untruths while spreading it.

G. A. J. COLE.

OUR BOOK SHELF.

The Functional Inertia of Living Matter. A Contribution to the Physiological Theory of Life. By Dr. D. F. Harris. Pp. xi+136. (London: J. and A. Churchill, 1908.) Price 5s. net.

THE book before us deals, mainly from the physiologico-philosophical standpoint, with a property of living matter which has excited the interest of biologists, and which, indeed, has been the field, not only of much speculation, but also of much experiment. The fact that certain forms of living matter, whether they are integral parts of a highly-developed and differentiated organism, or whether they consist of more or less apparently undifferentiated protoplasm, either do not respond at all or respond only after varying intervals of time to certain stimuli has long been

known, and the condition of the protoplasm in question during this time has long been investigated by biologists. We use the term *apparently* undifferentiated advisedly, since, as has been often pointed out, it is sometimes a matter of extreme difficulty to know whether, when dealing with the infinitely simple, we are not really dealing with the infinitely complex.

Dr. Harris's brochure is an elaborate, for the most part literary, examination of this subject, and quite apart from the conclusions he draws from his investigations is of considerable interest, and will well repay the reading. In a short review of this nature it would be quite impossible to consider in even approximate detail the facts related in the book, the observations upon which they rest, or the interpretations to which they are open. The property of living matter upon which the non-response to stimuli or the so-called latent period preceding response depends is termed by the author functional inertia. He at first introduces this term, so well known and accurately applied by physicists, somewhat apologetically, as perhaps complicating physiological nomenclature; in reviewing the literature of the subject, however, he finds many precedents for the use of the term inertia as describing the resistance offered by living matter to any change in its condition. Perhaps to others, as was actually the case to the reviewer, the first cause to occur to one's mind, of failure on the part of living matter to react to stimuli, is fatigue. Dr. Harris discusses fatigue and its bearing upon functional inertia.

In a short summary the author postulates that functional inertia is as fundamental, primary, and primitive a property of protoplasm as its opposite, irritability, and that the phenomena of vitality cannot be adequately conceived in one of these properties exclusively.

We would conclude our remarks upon Dr. Harris's work by simply saying that it is interesting and suggestive, and well worthy of careful perusal, not only by those interested in the many observations relating to the phenomena of the latent period accompanying the stimulation of living matter, but also by those interested in the larger if less accurately conditioned field of biophysical philosophy.

F. W. T.

The Elementary Theory of the Symmetrical Optical Instrument. By J. G. Leathem. Cambridge Tracts in Mathematics and Mathematical Physics, No. 8. Pp. vi+74. (Cambridge: University Press, 1908.) Price 2s. 6d. net.

MAKING a Cambridge tract is a feat, performed in this instance with a finish of which the writer may well be immensely proud. The Gauss theory of refraction through a series of media bounded by spherical surfaces having the same optic axis admits of being handled with that deftness which is the most marked characteristic of the Cambridge mathematician, and which is here admirably exemplified. All the essentials of the Gauss theory are condensed into some fifty octavo pages, and so clearly set out that the average mathematical student should have no difficulty in absorbing the whole in a few hours, to forget it, not impossibly, with equal readiness.

For, in spite of some reference to concrete instruments and some remarks on certain facts of observation not generally recognised, the book remains—unavoidably, perhaps, in view of its aim and its limited space—essentially academic. It will be grateful to the student, and appreciated by the mathematician already familiar with the matter it presents, but we fear there are few designers of symmetrical optical instruments, in this country at least, to whom it will appear attractive—in spite of the avoidance of the now familiar continued fraction. In its very