



PUBLISHED
SEMI-MONTHLY.

The only Newspaper devoted to the Lumber and Timber Industries published in Canada

SUBSCRIPTION
\$2.00 PER ANNUM

VOL. 5.

PETERBOROUGH, ONT., JANUARY 1, 1885.

NO. 1.

THE APPLICATION OF SCIENTIFIC & PRACTICAL ARBORICULTURE TO CANADA.

PAPER BY PROF. BROWN, OF THE GUELPH AGRICULTURAL COLLEGE.

Is there any country whatever that has made an eminent agricultural history and does not now complain of want of trees?

Advanced nations are not discussing the worth or worthlessness of trees in their rural economy; they are considering how best to secure the fullness of the value thereof in all their bearings. In doing this much serious consideration is necessary. It would be very unwise for any country to rush into extensive tree planting without a clear idea as to how the work should be begun, carried out and maintained. It is my purpose briefly in this paper to show what Canada can do in the scientific and practical application of arboriculture, and before handling the subject as a forester, allow me to submit some general views.

Canadian forestry will have no place in all its scientific and practical value until one of two things be accomplished: One is the conviction on the part of her farmers of the necessity of conserving and replanting, therefore, their education up to this; and the other is the power by Government to resume parts of the country for conserving and replanting. Both will be difficult. The former would be the slower but eventually the most thorough because of self-interest; the latter would be more immediate and possibly less efficient, practically, though scientifically better applied. No large number of various interests could be so well arranged as by a company, and therefore Government, as a company, will have to become foresters in all the many details of the profession.

Much of our indifference in this subject arises from the common idea that the planter cannot himself personally hope to receive all the benefits from the conservation of the present trees, and particularly from replanting. American returns, to the American, must be smart, strong, and undoubted; the idea of permanency in the long after years does not concern us so much as now. In Europe it takes a shape that may never be realized here, because of one thing—that one thing is large proprietary, the possessing within one man's power all the area and class of soil suitable to profitable production on a large scale, so that even that one man can employ officers and men in such number as make profits certain. Cultivated Canada meantime is so sub-divided as to preclude all idea of sufficient massing of woods to receive equal results with Europe,—but the day may come, and meantime progress must be made otherwise.

I believe it is the experience of the world,

that more difficulty, in various forms, is found in re-clothing with trees where trees grow before, than it is to plant, not replant, a country for the first time. There is not only the practical fact of succession of cropping in its scientific and natural bearings, as similarly realized for example in the products of the field, but the more serious one of the indifference of those who cut the first crop. Most of us think of trees as means of shelter, under several forms. We like shelter for buildings, shade for ourselves, shelter and shade for animals in the field, and shelter for farm crops. These alone would make up a large value in any district where required, and would justify all the cost and subsequent attendance. Yet we have another aspect of the question that takes an equally strong place in our regard: *Climate* is not alone a matter of great outside causes, but one intimately related to local influences, among which trees are pre-eminent. We have no time to show how temperature, rainfall, moisture, and evaporation are directly influenced by a small or large surface of trees, and how, therefore, water is largely in the hands of trees for local distribution. This second duty of forestry as a science and practice would even seem to swallow up the previous question, and is consequently inducement alone to its prosecution on our part. Were neither of these sufficient, however, to convince, the third great reason for tree cultivation will surely convert even the most American amongst us. It is no matter of doubt, under average conditions, in any country, that tree culture is more profitable as a crop than its own agriculture, year by year. This position is not open to question, but clear and marked in all experience where age has given time for proof. The area of trees in Canada is not an unknown thing in the older districts, and it is not true that it is poorly wooded in comparison with other countries. The United States can show twenty-five, and Canada nearly fifty per cent. of the cultivated districts as still under trees. This is possibly larger than any other continent, if we except the northern part of Europe, where agriculture is necessarily at a discount, and where forest is practically untouched. The cause of our discontent then is not want of forest per nation but its regular distribution to subserve all the needs of the nation.

The existing condition of our forests is the very first consideration in this enquiry. Outside of the lumbering interest, which of itself is simply a taking without system, there is no enclosing, preserving, caretaking, or conserving in any sense except the right of individual ownership, some of whom do act the forester, but nationally there is nothing recognized. The average "bush" of North America is a beautiful sight and yet a sad one. The artist must revel in its variety of form and foliage, but the fighting for place, the smothering and

rotting for want of light and air can only be estimated by those who are scientifically and practically foresters. I do not mean that our forests in every case should be managed similarly to those in Europe, because much of our best timber requires very different conditions, but similar principles ought to guide our management.

There are really no figures to give as to the extent of Canadian forest, either as to gross area or special kinds of timber. The small map, recently issued by Dr. Bell, of our geological survey, gives a good idea of the northern limits of the principal trees, but, of course, it cannot help in either of the particulars named. As the country, with the exception of prairie, was originally all forest and as we have cleared about 25,000,000 of acres for agricultural purposes, it may be said that the whole country is still under trees with these exceptions. What the extent is to a million acres nobody knows, nor do a million acres one way or the other affect our subject.

We have four distinct fields of operation in the future of Canadian forestry. 1st. The untimbered lands such as prairie. 2nd. The older cleared portions. 3rd. The recent forest settlements, and 4th the untouched forest. Each of these will require different methods as to conserving, clearing and replanting, although all will be subject to one grand system of operations. To submit details now would be unnecessary when the object is to impress principles.

But yet another aspect of the question is the requisite proportions of tree surface to that under farm crops. What should it be? This is just one of the things that we do not know and that we are not likely ever to know as a point for general practical guidance. When I had the honor of addressing the British Science Association, at Dundee, in 1867, and at Norwich, in 1868, upon the claims of arboriculture as a science they knew little upon this point in a country possessing greater physical distinctions than Canada. The conditions are so various as affected by climate, altitude, latitude, aspect, soil, sea or lake neighborhood and vegetation, that no possible number of observations in any length of time could say how much for one district or so much for another. However, men do come to realize through science and practice—practice especially—that a farm or district needs the protection in certain places, and thus a country could easily be re-clothed to the extent required for such shelter, if not for regulation of climate and other considerations, to which we will soon refer. The point then of immediate shelter is within everybody's knowledge, and needs no scientific guidance, and I may here say no governmental spurring. But the greater field of climate as an unknown one practically in this relation, is more a national problem, and still very much a scientific inquiry, and what it will

have to say in regard to the proportion of trees to farm crops no one can tell. Of course if men disregard everything but the direct profits from trees as a crop upon land, another century may actually find some countries going back to the days of too many leaves and too little arable. Viewing trees in all their relations I am of opinion that upon an average of conditions in Canada, one fourth of the surface should be covered by them, and as this is just one half of what we have at present all over the forest districts, there rests the apparent inconsistency of wanting to conserve and replant all the while that we possess double what is required. This brings out the fact that it is the irregular distribution of tree surface in our case which gives trouble, that some parts have more than required, and others have been overcleared.

As the subject grows upon our attention, we are next concerned with what parts of the country should be conserved or replanted, and in this part of the study it is obvious that our views cannot be confined to single farms or even special sections. Referring as we must to the great overruling influences, as previously indicated, we have to deal with geographical features that may embrace thousands of acres that have to be subserved with one or more massing of trees. Just where to conserve or replant, how much on the spot or spots, so as to gather and dispense all the virtues that trees are known to possess, is the great problem of the future. To say that we should only replant our less valuable soils is nonsense, though apparently sensible enough from an agricultural standpoint; that high lands should be conserved or re-clothed as against lower parts is largely true, though not generally applicable, and that conserving and replanting must go hand in hand and take place anywhere as found best through experience, is correct in every sense.

Following this view of the subject there is naturally that of suitability of certain kinds of trees for special purposes. We have soils and climates wherewith to do almost anything in tree life from the pine of the far north, which luxuriates in an apparently bare rock cleft, to the walnut of the south, that must send its carotry root several feet into a rich soil. The preparation of the soil, methods of planting, including fencing, draining, knowledge of enemies and friends in nature, and all the management throughout, in order to attain the highest results are not for our time on this occasion.

In connection with this branch of the subject, however, allow me to present to the Association some copies of a list of trees which I use in teaching at our College, and classified similarly to those in Loudon's work

And now for the more special purpose of these notes, and in order to place myself properly with the Association, it is fair, as a matter of business, to note that what I am advancing is founded on British experience, beginning in