

## FINNISH TIMBER RAFTS.

In an account of a trip from St. Petersburg to the interior of Finland, Prof. John Croumbie Brown, author of "Forest Lands of Finland," makes mention of two immense timber rafts he met in his trip. He says:

A little below Nyalot we met two Finnish timber rafts containing each, it was estimated by a Finnish gentleman, about 5,000 logs; and above Nyalot other two containing according to the estimates of a Finnish engineer engaged extensively in the manufacture of machinery for saw mills and other purposes in Nyalot, 10,000 logs each. I have called these Finnish timber rafts. The movement of all the Finnish timber rafts seen by me on the Saima See was affected by a boat carrying out an anchor to a considerable distance ahead, and the raft being warped thither by a windlass on the raft, to which motion was given by a horse on board. The men had on board a fire for cooking, and a small hut for shelter.

In regard to the form of the raft which is known in Northern Russia, if not also here, as the *koshell*, M. Judrae, a distinguished member of the Imperial Forest Service in Russia, gives the following information:

Up to 1860, logs designed for floatage on the lake were generally made up into rafts at considerable expense; but in 1861, a peasant, a native of Finland, devised the system of floatage in the so-called *koshell*. These *koshells* are of two kinds, designed respectively for transit by lake and by sea. The former are of a less complicated structure than the latter. The lake *koshell* consists of two parts, a head and a body. The head is a simple raft of logs of ordinary size one row deep. On this the navigators take their places, and sometimes horses, together with a windlass or other machinery for which an anchor is attached. The head is formed of logs arranged lengthwise in a regular row, the number varying with the intended size of the *koshell*. It goes foremost, and on it the moving person operates. To the left side of the head there is attached a string of logs, joined end to end, where they are hewn thin, and through a hole about an inch in diameter they are tied together with twigs twisted like a rope, each end of this being twisted or tied up into a knot not likely to slip. One log is thus added to another, until a sufficient length has been prepared. When the last is attached to the right side of the head and there is formed an extensive loop or circle of connected logs—a chain, of which these are the links. This is called the body of the *koshell*, and into the interior of this circle are tumbled, without any determined order, the logs which are to be floated away. Into these lake *koshells* there are put from 4,000 to 8,000 or 10,000 logs; and sometimes, as a prevention against rupture in a storm, there is superadded to the encompassing chain of logs a thick rope.

The sea *koshell* differs somewhat from the lake *koshell*. The head consists not of one layer, but of several layers of logs, either laid in alternate directions, or, if all be in one direction, bound very firmly by cross logs. Short logs are generally employed, the so-called seven *archine* logs, about 16 feet long. What is of first importance in these is their power of resistance, as they are frequently subjected to the strain of severe storms, and in view of this the logs in the body of the *koshell* are all laid in regular rows. The first row following the head may consist of 45 logs, the second of 50, the third of 60, and so on, increasing till the row in the middle of the body may consist of 150 logs, after which the number in each successive row diminishes till the body presents the outline of a lengthened ellipse. Besides this, in several places the ends of the body are connected by means of logs fastened across them, so as to keep the *koshell* more compact. *Koshells* formed thus can withstand very severe storms. They may contain from 1,200 to 3,000 logs, but not more.

Such *koshells* are generally towed by steamers; and to show how much cheaper the floats, if timber by *koshells* than the floatage by rafts of single logs, and how much the first proprietor of the merchant gains in profit from this contrivance of the Finnish peasant, though it is not very easy to do so completely I may state the following particulars: In the floating of tim-

ber on the Mt Kosoro by the old system, the log of timber costs about five kopecks; now, by floating it in these *koshells* it costs about one and one half kopeck, or less than one-third of the former cost. The bringing of timber to the Koumsa saw mill, in consequence of this new method of floatage, costs for each log, about thirty kopecks less than it did formerly. If we assume that the transport of each log to the saw mills in the Government of Olonez costs, upon an average, ten kopecks less than it used to do; and if we take 237,000—the number of logs cut up by these saw mills in 1865—as the average annual number, then it will be apparent that the saving of expense will be 23,700 roubles, or £2,870 per annum. Such results have followed this so-called trifling contrivance. The name of the peasant has not been made famous, but it is said that he is now a very rich man, and the other peasants speak of him as a very knowing one.

## EDINBURGH FORESTRY EXHIBITION.

We have been favored by Mr. G. Cadell, of 3 George IV Bridge, Edinburgh, Secretary of the International Forestry Exhibition to be held at Edinburgh in 1884, the following documents in connection with that event:

## CLASSIFICATION.

## CLASS I.—PRACTICAL FORESTRY.

Sec. 1. Implements and tools used in forestry. Draining, enclosing, and surveying instruments, chains dendrometers, etc.

Sec. 2. Models of foresters' huts, drying sheds, charcoal kilns, timber slips, sluices, bridges, and weirs.

Sec. 3. Plans of embankments, rafts, and appliances for floating timber.

Sec. 4. Machinery or models for transporting timber and transplanting trees.

Sec. 5. Saw mills—woodworking machinery of every description, and pulping apparatus, in motion or otherwise.

Sec. 6. Fencing materials of all kinds including gates and stiles.

## CLASS II.—FOREST PRODUCE, RAW AND MANUFACTURED.

Sec. 1. Collections of timber specimens and ornamental woods; a. indigenous or naturalized; b. exotic.

Sec. 2. Woods used for ordnance—as gun carriages, etc.

Sec. 3. Woods used for railway purposes—natural or prepared.

Sec. 4. Wood pavements.

Sec. 5. Cooperage—tubs, barrels, etc.

Sec. 6. Wood carving and turnery, with tools used.

Sec. 7. Basket and wicker work.

Sec. 8. Fancy woodwork, including veneers, parquetry, bog oak articles, stained and colored woods, etc.

Sec. 9. Wood engraving, with samples of wood.

Sec. 10. Bamboos, canes, reeds, and manufactures therefrom.

Sec. 11. Tanning substances—barks, extracts, etc.

Sec. 12. Dyeing substances—woods, roots, flowers, etc.

Sec. 13. Barks, including cork.

Sec. 14. Fibres and Fibrous substances.

Sec. 15. Materials for paper manufacture.

Sec. 16. Gums, resins, and gum elastics.

Sec. 17. Wood oils and varnishes—including lac of sorts.

Sec. 18. Drugs, foods, spices.

Sec. 19. Charcoal for gunpowder, tinder, etc.

Sec. 20. Peas and its products.

Sec. 22. Cones, seeds, and fruits of trees and shrubs.

## CLASS III.—SCIENTIFIC FORESTRY.

Sec. 1. Botanical specimens of forest flora.

Sec. 2. Microscopic sections of woods.

Sec. 3. Parasites—fungi and lichens injurious to trees.

Sec. 4. Edible fungi—in their natural state or preserved.

Sec. 5. Forest fauna injurious to woods,

Sec. 6. Forest Entomology.—Useful and noxious insects, with specimens illustrative of the damage done by the latter.

Sec. 7. Preservative processes applied to timber.

Sec. 8. Specimens and diagrams illustrating

the geographical formations adapted to the growth of trees.

Sec. 9. Fossil plants—collections illustrative of the trees of coal measures, etc.

Sec. 10. Trees found in bogs—oak, fir, etc.

## CLASS IV.—ORNAMENTAL FORESTRY.

Sec. 1. Growing specimens of rare and ornamental trees and shrubs—in tubs or otherwise.

Sec. 2. Rustic work—arbours, bridges, gates, seats, etc.

Sec. 3. Dried specimens of ornamental objects, including foliage, &c.

## CLASS V.—ILLUSTRATIONS OF FORESTRY.

Sec. 1. Paintings, photographs and drawings of remarkable or historical trees, foliage and scenery.

Sec. 2. Delineations of trees in their native countries, or of recent introduction.

Sec. 3. Illustrations showing effects of blight, accident, parasitic growths, or any abnormal condition.

Sec. 4. Sketches of practical work and operations in the forests.

N. B.—[Special attention is invited to this class.]

## CLASS VI.—FOREST LITERATURE AND HISTORY.

Sec. 1. Reports of Forest Schools or Departments—forest periodicals and other publications manuals and almanacs,—treatises on measuring and valuing woods,—forest floras of different countries,—on fixation of dunes, and on ancient or extinct forests.

Sec. 2. (a.) Working plans of forests and plantations, valuations and surveys of estates, etc. (b.) Charts illustrative of the geographical distribution of forest trees and their altitude.

(c.) Maps illustrating the distribution of forest produce, forming articles of British commerce.

(d.) Forest book-keeping and accounts.

N. B.—[Special attention is invited to section 2.]

## CLASS VII.—ESSAYS AND REPORTS.

Essays and reports on specific subjects, for which premiums are offered as per separate schedule.

## CLASS VIII.—LOAN COLLECTIONS.

Collections within the scope of the foregoing classes—for example, illustrating the fauna, flora, or forest produce of a province or district—would be acceptable.

## CLASS IX.

Economic condition of foresters and woodmen.

## CLASS X.—MISCELLANEOUS.

Articles not particularised in the above divisions, if bearing on the objects of the exhibition, are admissible, with the sanction of the Executive Committee.

N. B.—[Exhibitors in making their entries must quote the class and section in this column.]

## REGULATIONS.

1. The exhibition is intended to include every thing connected with, or illustrative of, the forest products of the world, and will be open to exhibitors from all countries.

2. Entries close on the first of March 1884. All exhibits must be intimated by a certificate of entry, forms of which will be issued on application to the secretary.

3. The committee reserve power to restrict the space applied for, or to decline any application, in either of which cases the secretary will, as soon as practicable, notify the same to the applicant.

4. Exhibitor will be charged one shilling per square foot of floor space. Open air space free. Cases for exhibits must not exceed ten feet in height.

5. Exhibitors must pay all expense of transit, delivery, fixing, and removing their exhibits.

6. All packages containing articles intended for exhibition must bear the distinctive mark I. F. E. EDINBURGH, in red paint; and they must also have painted on them, the name and number (which will be sent on allocation of space) of the exhibitor. The way-bill must accompany all packages, and contain the name of the exhibitor, his number and address.

7. Arrangements will be made by the committee for the reception of exhibits, at a date to be afterwards fixed.

8. The committee will not be liable for any loss or damage, from whatever cause, which

exhibits may sustain in transit, at the exhibition or otherwise.

9. Exhibitors must provide, either personally or by their agent, for the reception, setting up, and removal of their exhibits, and the verification of the same; in default whereof, the committee reserve the right of doing whatever they may consider necessary at the expense of the exhibitor.

10. Exhibitors of machinery requiring the use of water, gas or steam, must state, on making their entries, the quantity of water, gas, or steam which will be required. Exhibitors of machinery in motion must state the rate of speed at which it is to be driven. The furnishing of all connections, shafting, pulleys, belting, etc., must be at the expense of the exhibitor. Gas, water, or steam power will be supplied on terms to be hereafter arranged by the committee, and be under their entire control.

11. Medals, money prizes, and diplomas for exhibits and essays, will be awarded by competent jurors.

12. No photographs, copies, or other reproductions of any objects exhibited, will be permitted to be taken without the consent of the committee and the exhibitor.

13. Contributors to the loan department are requested to communicate with the secretary, who will supply special forms to be filled up by them. Free space will be given for workmen's approved models.

14. No exhibitor will be allowed to transfer any allotment, or to allow any other than his own duly admitted exhibits to be placed thereon, except by permission of the committee.

15. No articles can be removed before the close of the exhibition, unless perishable, regarding which special arrangements will be made.

16. To ensure uniformity of decoration and general effect, no exhibitor will be allowed to put up any sign, flag, banner, or any other kind of decoration or erection, without the approval of the committee.

17. Exhibitors will be required to provide all necessary attendance, and to keep their stands and exhibits properly cleaned, and in good order, during the whole period of the exhibition.

18. Exhibitors may mark the selling price of articles exhibited complete, for the information of the jurors and visitors.

19. No placards will be permitted either within the exhibition or on the enclosure except by special permission of the committee. No handbills, newspapers, books, etc., are allowed to be sold in the exhibition without their sanction.

20. All fulminating and explosive substances, and all dangerous materials, are absolutely forbidden to be sent.

21. All cases must be unpacked as soon as received, and the empty cases taken away by the exhibitors or their agents.

22. The committee reserve the sole right of compiling and publishing a catalogue of exhibits, which can be purchased only within the exhibition.

23. Smoking is strictly prohibited within the exhibition buildings.

24. All persons admitted to the exhibition shall be subject to the rules and orders of the committee.

G. CADELL, Secretary,

3 George IV Bridge, Edinburgh.

26th September 1883.

NOTE.—The committee will endeavor to obtain from the various British railway companies special terms for the conveyance of exhibits to and from the exhibition, and should they succeed, such arrangements will be duly intimated to exhibitors. The committee, however, do not undertake any responsibility between the railway companies and exhibitors with reference to the despatch, transmission, delivery, or return of exhibits.

Official London Agent—WILLIAM H. RIDE, Esq., 14 Bartholomew Close, E.C.4.

A PARALYTIC STROKE.—W. H. Howard, of Geneva, N. Y., suffered with palsy and general debility, and spent a small fortune in advertised remedies, without avail, until he tried Burdock Blood Bitters. It purified and revitalized the blood, caused it to circulate freely, and quickly restored him to health.