

MAINE STATE LEGISLATURE

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SEVENTY-FOURTH LEGISLATURE

HOUSE.

No. 43

STATE OF MAINE.

To the Honorable Senate and House of Representatives:

The Commission appointed to investigate the methods of scaling logs and lumber in the State of Maine has gone into the matter as thoroughly as possible and beg leave to report as follows:

As to the methods now employed in measuring manufactured lumber, nothing has been presented to the Commission that indicates anything but uniformity and general satisfaction, hence that part of the order has not been gone into and will not be treated in this report.

The question of scaling logs is one that required considerable investigation and study, and in this investigation the Commission was somewhat handicapped in that it had no power to summons to its hearings persons from whom valuable information might have been obtained.

Three fairly representative meetings were held. One at Rumford Falls for the Androscoggin waters; one at Waterville for the Kennebec waters; and one at Bangor for the Penobscot, Aroostook and St. John waters. Each of these meetings was

advertised in the newspapers in its vicinity; and in addition personal notices were mailed to persons known by the Commission to be interested in the question under discussion.

From all the evidence gathered at these hearings and through correspondence it appears quite conclusively that there is a general dissatisfaction with the present methods of scaling logs on the different rivers in the State, and a demand for some uniform method of scaling logs, so that the term one thousand feet of lumber in the log will mean the same on the Kennebec waters as on the Penobscot, the Androscoggin, the St. John or Aroostook waters—the same all over the State. A thing that far from exists at the present time.

The scale rules most generally in use in this State at the present time are the Holland or Maine Rule, also known as the Bangor Rule; the New Hampshire Rule, also known as the Blodgett Caliper Rule; and the Kennebec Caliper Rule, also known as the Hollingsworth & Whitney Rule.

Following is a brief description of the construction and method of calculation of the above named rules:

I.—THE HOLLAND RULE:

The use of this rule is restricted to Northern New England, chiefly to Maine, where it has long been the principal log scale. The Holland Rule was prepared from diagrams representing the small ends of logs of all diameters from 6 to 48 inches. The inscribed square of the logs was first determined, and the contents of the logs were then computed by allowing 1 inch for each board and one-fourth of an inch between the boards for saw kerf. The boards outside the square were reckoned, if not less than 6 inches in width; otherwise the whole slab was discarded.

This rule is applied at the small end of the log and the diameter taken inside the bark. The contents corresponding to the diameter and length are read directly from the rule.

2. THE NEW HAMPSHIRE OR BLODGETT CALIPER RULE:

By an act of the Legislature in 1866 this rule became the

legal scale for the state of New Hampshire. The standard of this rule assumes as a unit a log one foot long and sixteen inches in diameter. This unit is commonly termed a cubic foot, but in reality is equivalent to about one and four-tenths standard cubic feet. The contents in so-called cubic feet, more correctly units, of a log of any dimensions is found by the following formula: $V = D^2 \div 16^2 \times L$ in which V is the volume in standards, D the diameter in inches, and L the length of the log in feet.

The statutes of New Hampshire, 1901, gives the law as follows: "All round timber, the quantity of which is estimated by the thousands, shall be measured according to the following rule: A stick of timber sixteen inches in diameter and twelve inches in length shall constitute one cubic foot, and the same ratio shall apply to any other size and quantity. Each cubic foot shall constitute ten feet of a thousand board feet."

This rule is applied to the middle of the log and the diameter obtained inside the bark, the construction of the rule allowing three-fourths of an inch for the thickness of the bark. The contents in units or so-called cubic feet corresponding to the diameter and length are read directly from the rule.

Both the Holland and Blodgett Caliper rules were constructed for short logs at a time when lumber was plentiful and of little value as compared with present conditions, at a time when only the butt log of a tree was taken.

In such logs the difference of diameters of the two ends is very small and hence no allowance was made for the taper in a log.

Applied to that class of logs reasonably accurate results are given by either rule. But under present day methods of cutting logs where all interests are combining to save all the merchantable lumber in a tree once cut, other conditions present themselves and make necessary modifications in the rules in order to obtain anything like true results.

It is the question of the taper of the log that affects the application of the rules.

THE HOLLAND RULE.

In the case of the Holland Rule there are many different ways of determining the taper in the log which gives as many different results in the contents. As commonly used, logs over thirty-two feet in length are reckoned as two logs, the scaler measuring the diameter of the small end and estimating the diameter of the middle of the log which is taken as the top of the butt log.

To overcome this difficulty and to obtain the contents of long logs reasonably correct, it appears from testimony taken at our hearings that a few scalers have adopted the method of theoretically cutting each log into 14 or 16-foot logs and obtaining the diameter of the smaller end of such logs by means of calipers, thus carrying the rule back to the kind of logs for which it was constructed. As an example of such an application, take a log which is 60 feet long, the scaler will measure from the butt, 14 feet and by calipers ascertain the actual diameter at that point and from the length and diameter reads from the rule the contents of the first 14 feet in length; he then measures 14 feet and in like manner obtains the diameter and contents of the second 14 feet; and so for the third 14 feet; and for the remaining 18 feet. To get the total contents of the log he adds the four results thus obtained. The rule so applied gives fair and accurate results. It appears that this method is employed in scaling a large percentage of the logs cut on the Androscoggin waters, as a check on the scales obtained with the Blodgett Caliper rule, with the result that but a very little difference is found.

THE NEW HAMPSHIRE OR BLODGETT CALIPER RULE.

In the case of this rule the taper in the long logs again enters into the question of obtaining the correct contents. Like the Holland rule, this rule was constructed for short logs and no provision was made for taper, for in that class of logs the taper

was not enough to affect the results. When applied to such logs the New Hampshire law designates 100 of the so-called cubic feet, better units, as constituting 1000 feet board measure. On this basis a log 16 inches in diameter at the middle will contain as many units as it is feet in length and when applied to the log for which the rule was constructed, the length multiplied by 10 (10 board feet in a unit) the product will be the contents of the log in board feet.

To provide for the irregular taper in the long logs as now generally cut it was found by actual measurements of a quantity of logs of various lengths in different localities that instead of using the ratio of 100 units to 1000 feet board measure, it is necessary to take the ratio of 115 units to 1000 feet board measure, thus allowing a discount of about 13% for the extra taper in the smaller end of the log.

The Kennebec Caliper or Hollingsworth & Whitney rule is based on an actual cubic foot, one-fourth inch graduations, and is applied to the center of the log where the diameter is obtained, inside the bark. The contents in actual cubic feet are read directly from the rule. This rule was computed from measurements made by the Hollingsworth & Whitney Company, and is in use principally by this company at the present time.

So much for the rules now in use. The people of Maine are fast coming to the realization of the value of her forests and are demanding a more conservative method of operating with a view of obtaining the greatest possible amount of lumber with the least possible waste.

To carry out this idea successfully some means of scaling must be employed that will encourage, rather than discourage the taking out of the woods the entire merchantable product of the tree cut.

Of the scale rules now in use it appears that the caliper rule comes much nearer to accomplishing this result. And from the nature of the present conditions it is apparent that the true con-

tents of logs can no longer be obtained by the application of a rule the construction of which is based upon the top diameter, without other modifications.

The main objections to the present board foot rules are :

(1) Their lack of uniformity.

(2) Their application at the small end of the log and disregard for taper, which makes them very unfair for long logs. Even where the board foot rule is made along scientific lines and allows for an *average* taper, it will be less satisfactory for those species and classes of logs that vary considerably from this "average."

(3) From one point of view, it is really illogical to sell material according to the varying product different manufacturers get out of it. As well sell raw cotton in units of yards of cloth manufactured or sell wheat according to the varying measures of flour different mills can make out of it. The way to measure timber fairest to both buyer and seller is according to the solid cubic contents of the logs. Let the manufacturer make lumber, pulp, veneer, staves, shingles, or whatever he chooses out of his logs. This would also be fair for the logger, who would be paid more nearly on the basis of the weight of the material he handles. The price would vary with the average size and quality of the logs bought or sold. This is almost the exclusive method in Europe where the cubic meter is used as the unit of measurement.

The actual cubic foot is now used in this country in buying and selling high priced imported woods and we think it would be the most simple and satisfactory unit of measure to apply to our logs of today. From the data at hand we are of the opinion that a caliper scale rule based on actual standard cubic feet as a unit, so designed as to be applied in obtaining the diameter to the center of the log inside the bark, would meet the demands of the greater number engaged in the lumbering business of the State; and would be more readily adopted in general use than

either of our present rules in a modified form. In the construction of such a rule a computing or converting factor should be determined by the application of which one could readily reduce cubic feet to board feet, or vice versa, as the case might be. And we recommend as a converting factor, 185 cubic feet to be equivalent to 1000 board feet.

WILLIAM J. LANIGAN,
FRED A. GILBERT,
HOSEA B. BUCK,
EDGAR E. RING.

STATE OF MAINE.

HOUSE OF REPRESENTATIVES,

Augusta, January 29, 1909.

Reported by Mr. WING from Committee on Judiciary and
ordered printed and recommitted.

E. M. THOMPSON, *Clerk.*