

ROOT AND BRANCH



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"I often imagine that a district - such as each District Forester has - might be likened to a factory with the District Forester as Superintendent. Certainly our factory is spread over a lot of ground, and the organization is likewise spread out with many miles between. The same principle, however, governs that no Superintendent could carry on as such unless he spent a good proportion of his time in his factory and in direct contact with his organization.

"While the scattered nature of our work and our organization makes supervision and inspection more difficult, to the same degree to my mind does it make it that much more important for the executive staff of the district to be in the field a large proportion of the time.

"The work in the Vancouver district is naturally divided into four departments - Operation, Management, Records and Scaling. There is a responsible executive officer in charge of each Department. The officer in charge of Operation has in addition the title Assistant District Forester. If you ask this officer what that means, he will probably tell you that it's a bad name he gets for doing most of the District Forester's work a good deal of the time! However, I think he will agree with me that I help him out on his end about fifty-fifty, and the combination works pretty well.

"The terms of agreement are that both District Forester and Assistant District Forester will be familiar with all lines of work and in a position to relieve each other and take full charge, to enable one or the other to be in the field alternately, half the time. Before very long, the officer in charge of Management will lend a hand, so that if necessary both District Forester and Assistant District Forester can take the field at the same time, when the situation demands it.

"It is to my mind essential as well that each man should fit himself to take over the reins of the job higher up, and be ready when the time comes. Each Department is working on that basis. The officer in charge is advised that he will be felt responsible for results and should so organize his work that he is able to put the necessary time in the field, and alternate with his assistant.

"The organization in each district is more or less based on the volume of work. I can't say that this system would have been very successful when I had the Vernon district, in 1913, and was the only one in the office for the first year; but now I believe each District Forester has an Assistant, and I believe the principle holds good throughout the service.

"I am coming now to the subject allotted - Field Inspections by District Foresters.

"The need for a personal knowledge of field conditions is obvious and fully recognized by you all. Your position in taking action on field reports is absolutely untenable unless you are, in a general way at least, familiar personally with the conditions on the ground, and also familiar with the capabilities, methods and reliability of the man making the report.

"Your position in planning your organization, laying out the work, moulding policy into practice, necessitates a first-hand knowledge of field conditions. Your relations with your men, to secure the best results, requires frequent personal contact to secure most favourable working and living conditions for them, and to insure that the right-sized man is in the right-sized job; and to educate and train your field-staff on policy, procedure, etc., etc.

"During January, February and March, the Ranger Meeting, District Foresters' Conference, Assistant Ranger examinations, and Pre-organization work for Forest Protection cut into field inspections, but the balance of the year a strenuous effort is made to spend about half the time each month in the field.

"I don't doubt in all Districts the Ranger's time is fully occupied. It appears to be somewhat of an imposition for supervising officials to call on the Ranger, interrupt his work, and demand to be shown over his district. In the Vancouver district, this is very true, and the volume of work expected from each man does not permit of many such visits in the month. I find, therefore, that independent means of transportation is essential, and a considerable amount of planning of trips is necessary to avoid too much interference with the field man's routine. I have found that a little consideration in this regard is much appreciated. Most of the Rangers have now organized their work to cover their districts on a monthly system, which makes it desirable, when at all possible, to pick them up on the job; and with the communications now at our disposal it is possible to keep in touch with the movements of most of the Rangers.

"I have not been able to plan my field work on any system yet. If possible, I would like to arrange to cover the whole district, say every three months - and make four complete rounds a year. Most field trips now are taken on special business, and as many Ranger contacts made as time, and the means of getting about, permits.

"There is usually some point of quality or quantity of work to be taken up with certain Rangers. However, where there is no specific business in hand, a combined social and business visit is planned.

"I have found that on an ordinary inspection visit, there are certain lines of inquiry that usually open up profitable discussion and may lead to the actual working out of a problem that has been worrying the Ranger. On an inspection visit to a

ranger, the following procedure would suggest itself -

"Commencing with the usual generalities, discover complaints, inspect boat, car, or other equipment. General news of District Office, or other districts visited. An inspection of files and discussion of unfinished business. Comment on reports which might lead to a participation in field work on due inspection in the district, making out a joint report, which the ranger signs and sends in; or if time permitted, running compass and assisting in the cruise asked for, assisting also in report. Perusal of emergency Fire Chart. Perusal of Management Chart.

"This latter system - the Management Chart - was recently put into force by Supervisor Wilkinson in our northern district, and has done much to solve the big problem of organizing field work for rangers in Boat districts. One ranger who, until recently, considered his job just one darn thing after another, came at me voluntarily as soon as I boarded his launch and said "Ask me how my management work stands - Go on! Ask me!" It stood about 100%.

"Discover dependability of work as a basis for action on reports. If possible, discover local prejudices, favouritism or hostility which might interfere with the good-will of the public; try to adjust this.

"See as many operators as possible with the ranger, and establish favourable working basis for the ranger, if possible.

"Establish contact with the public you are doing business with. Get the opinion of the public on the ranger in the district. Pass on any commendatory comment. Advise the ranger of any hostility and how to overcome. Try to establish a sound business footing between office, public and ranger: show him, if possible, the vital necessity for going into things carefully before recommending action, and reason out final outcome of his recommendations if acted on.

"Discover and smooth out friction between your own office and rangers, e.g., cut out the personal pronoun in business letters.

"By demonstration, if possible, show how to eliminate long-distance correspondence disputes between operator and office over terms of contract, equipment on machines, etc., by getting together on the ground.

"If the ranger is working under a Supervisor, go over the results of your visit with the Supervisor, get him to follow up any points, as usually he is in closer touch with rangers' problems and can accomplish the results desired.

"Don't forget when you get back to the office to fulfil every promise you have made, if at all possible; otherwise, half the good of your trip is lost because the Ranger forgets, if you do.

"Keep up a bi-monthly newsletter if possible, and give out as many pats on the back or 'Mentions in Despatches' as your conscience and the good of the service will allow. Go light on the kicks, enough of those get through anyhow!"

Mr. E. B. PROWD (Kamloops) opened the discussion on Mr. Andrews' paper.

"It should be borne in mind," said Mr. Prowd, "that a considerable proportion of the ranger's work is in connection with Lands and Grazing, which must be regarded as additional to his ordinary work as a Forest Ranger. At the same time, were the ranger to devote more thought to the planning of his work probably he would relieve himself of a good deal of the overload under which he now labours. Free and frank discussion on the spot often helps materially in the solution of the ranger's difficulties, but at the same time he should be required, or at least encouraged, to prepare his plans in advance. This has been emphasized in Forest Protection work, but is equally applicable to Management. Ranger Meetings were a long step in the right direction, and "ROOT AND BRANCH" had its uses as a medium for the dissemination of suggestions and ideas. Unfortunately, the rangers, so far, do not seem to take advantage of the opportunities which the magazine affords. The average District Office, of course, cannot be abandoned for any length of time by both District Forester and Assistant District Forester, but certainly they should contrive to spend a greater part of their time in the field."

Mr. P. S. BONNEY (Prince Rupert) followed. The disruption of his arrangements consequent upon his transfer from Prince George to Prince Rupert, he said, had prevented his formulating his ideas in regard to the subject under discussion. One of the main functions of field inspection work, he thought, was that it afforded both Ranger and Supervisor a chance to air their views as to how certain things should be done, and also to rid their minds of any misapprehensions under which they might be labouring. For instance, there are still several contentious matters of policy that require clearing up, and if those matters can be discussed (and particularly those which are not definitely set out) it will certainly clarify the situation and remove a good deal of confusion which is now hindering the rangers in their work.

Field inspection work, Mr. Bonney thought, was not done often enough. He could not speak for other districts, but he was conscious of this in Prince George; but not having an Assistant District Forester prevented his giving proper attention to this important phase. District Foresters and their Assistants should spend at least half their time in the field, he thought.

"There is too much paper work, and not enough actual working on the ground," said Mr. Bonney. "Let's do more forestry in the bush and less on paper!"

Inspections should be followed up by memos from the inspecting officer, as soon as he returns to his Headquarters. This is quite worth while and makes for efficiency. He should not depend upon his memory, but should commit to writing as quickly as possible, any instructions given verbally to the men in the field. Besides which, the notes recorded in this way become available for the use of others.

Inspections, to be of any real value, should be constructive; they must cover the individual problems which are troubling the field men.

There is danger, too, of sacrificing the value of field inspections by being over-generous with praise. Good work must always be recognized - that went without saying - but at the same time one must not hesitate to censure where censure was merited. To be over-generous with praise was to lessen its value as an incentive.

Mr. C. S. COWAN followed with a few brief remarks. It seemed to him, he said, that the inspecting officer in making his reports was too apt to be governed by his personal knowledge of the idiosyncracies of the men on whose work he was reporting, and that this personal knowledge was likely to color the report to some extent. This should be avoided as much as possible, and the work should be treated as good work or poor work, and not as being good, or poor, for the man who did it.

Mr. R. C. ST. CLAIR agreed with the idea of confirming one's verbal instructions with written memos.

"What kind of a Ranger is he, anyway?" is a question which is often asked of a District Forester, and often only vague replies were forthcoming, not by any means to be taken as a real indication of the Ranger's ability. This means that, when the question of promotion comes up, there is nothing upon which to base. The written memo, on the other hand, would form some sort of a record from which to gather whether or not the Ranger in question was a good, all-around, dependable man, and conscientious in his work, and would be of great value in helping to determine whether or not the man was worthy of promotion.

Mr. L. R. ANDREWS also expressed approval of the written memo as tending to prevent the confusion which would inevitably arise from conflicting instructions, so long as the memo was written while the verbal instructions were still fresh in the instructor's memory.

The Hon. Mr. PATTULLO, at this point, rose to remark that personally he considered no field of endeavor more important than Field Inspections.

"When I first took office," said Mr. Pattullo, "I said to the then Chief Forester (Mr. Grainger) 'Where you are likeliest to fall short is in the field.' At that time, of course, to use Mr. Grainger's own expression, the Forest Branch was operating under 'bare poles' owing to the depletion of the staff by the number on Active Service. At the same time, I had a reputation as being experienced in organization work which, naturally, I did not wish to lose, and I told Mr. Grainger that we could not hope to maintain a well-organized and well-conducted Department if we neglected field inspection work.

"What we wish is for the Department of Lands to be known as the best-organized Department in the public service, and I believe it is. Someone has to be at the top, and it might just as well be us!

"The Chief Forester himself should get out more into the field than he has been able to do in the past. The difficulties which prevented this have now largely been removed. Better revenue, better service, better Forest Protection, result from close field inspections.

"In 1916, the Provincial revenues did not exceed six-and-a-quarter million dollars, whilst the expenditures were in the neighbourhood of ten millions. Now our revenue and expenditure balance, somewhere around the twenty million mark. And, when one reflects that the Province of Manitoba, with a much larger population than ours, has a revenue of only seven million dollars, we may claim to be doing very well.

"The fact remains, however, that the cost of our Department has very greatly increased. At the same time, we have added materially to our Revenue, and I believe much of the credit for this is due to the Forest Branch. In fact, the actual nett revenue from the Department of Lands is equal to the total gross revenue of 1916-17. This refutes all arguments as to extravagance! I do not believe there is a Department which gets better value for its money. Private corporations do not get any better results than we do - if as good - and Governments have to work under handicaps from which the Private Corporation is free. We are all human and prone to err at times, and private corporations make mistakes occasionally in the management of their affairs, just as do Governments.

"I think field inspection work is most important. It is not enough merely to have a good organization; we must make the public feel that it is good. Sometimes we are apt to ignore the chronic kicker. That is a mistake; he may have a legitimate kick, and if so he is entitled to have it investigated, no matter in what light we may personally regard him. This is important in any case, but it is particularly so in the case of the chronic grumbler, for if he has a real ground for complaint and we do not look into it thoroughly, we only strengthen him in his attitude.

"To deal courteously and pleasantly with the public is at once a duty and good sound policy. 'The soft answer turneth away wrath.' We have comparatively few complaints, however, when one considers the size and scope of the Department; and I want to commend you and to say that, generally speaking, the results are more than good. I think there is a special responsibility on the Minister; he is the 'Trouble Doctor!' He must try to investigate all complaints that come before him, and after weighing them I have come to the conclusion that the Department is in pretty good shape."

Mr. PATTULLO regretted his inability to stay longer, and left, after expressing the hope that much benefit would accrue from the interchange of ideas.

Mr. P. Z. CAVERHILL, in commenting upon the remarks made by the Minister, to the effect that the revenue was increased by field inspections, said that in 1914 we had a revenue of approximately \$3,000,000, but at that time 75% of it came from rentals and fees, which required a staff of only two or three men to collect. Now practically 50% of it came from active operations. One of the most important sources of revenue is from Stumpage Appraisal; if this is set too high, the operators suffer - if too low, revenue suffers. We must endeavour to strike a happy medium.

He then called upon F. D. MULHOLLAND (Vancouver) who is responsible for the appraisals in the Vancouver district, to present his paper on -

"STUMPAGE APPRAISAL, OBTAINING THE INFORMATION AND APPLYING IT."

Mr. MULHOLLAND commenced by pointing out that, important as is this question at the present time, it will become much more so as time goes on and current Timber Licences expire.

"As it is necessary to decide just what information is required before discussing methods of obtaining it, I have divided the subject into three parts -

- (1) The information necessary for stumpage appraisal,
- (2) Methods of obtaining it, and
- (3) Its application.

"(1)-(a) A first essential is an accurate cruise. It is obvious that an error in the cruise will cause a corresponding error in the amount per thousand estimated to cover profit, risk and depreciation, and it is waste of time to attempt an accurate appraisal on an inaccurate cruise.

"In addition to quantity it is also necessary to know the quality of the timber, its most profitable utilization, and its relationship to adjoining timber insofar as the latter may affect the cost of logging. Its condition as regards maturity should be known so that an intelligent estimate may be made of the prospects of increment in volume and value if left.

"(b) Next, sufficient examination of the tract must be made to enable a decision to be made as to the most economical method of logging and transporting the product to market, and the cost of the operation. While we do not yet attempt to dictate methods of logging Crown timber, we can and should obtain a price for it which will not allow an inefficient operator to make a profit. I would suggest that where timber is so remote or so difficult of access that the best planned operation could not produce any stumpage value, it would seem to be a practical necessity to recognize a minimum stumpage value in order to avoid sacrificing timber which might bring in a very satisfactory revenue in the future.

"(c) The last information necessary is the probable selling price. Given a good estimation of quality this is easily found where there are open markets for the product, and the operation is not likely to be sufficiently protracted to allow time for a serious difference in market values. In any case, it seems fair enough to figure on present prices for short term sales, since if the market falls we do not undertake to lower our contract stumpage rates, nor do we raise them if the market strengthens. The profit or loss is the operator's and we are protected by a security deposit.

"Where there is no open market, as for instance where all the logging in the district is for one pulp mill, or where an operator is logging for his own mill, the logical way is to find the sale value of the product which does reach a competitive market - that is, the lumber or the pulp. In the case of the ordinary sawmill this can be done, but I doubt if we are competent to follow our timber through the processes of manufacture into pulp, and probably we would not be justified in doing so. In such a case we must accept as the selling price that offered by the mill, provided it is not below that offered by the nearest competitive market, plus the cost of transportation to that market.

"The laws of supply and demand have just about as much effect on stumpage value as on most things, and probably the industry is guided more by them than by intrinsic values. There is at present in our stumpage appraisals, on the Coast at any rate, far too much guessing for them to be considered accurate. Not only do we have to guess that the costs of logging will be those of some typical operation we know of, but we also have to guess very often what some of the latter costs are.

"(2) To follow the same order with regard to methods of obtaining the information required -

"(a) Cruising accuracy need not be discussed, nor yield tables for use in connection with appraisals of immature timber.

"(b) The chief hunting ground for knowledge is the study of costs on operations in progress, which I take to be the main object of this discussion. There are several methods of obtaining these costs, some more applicable to certain of the costs than others.

"First, by detailing special parties of time-keepers to study in detail costs of various parts of the operations as laid down in Circular A-30.a; next, a Ranger inspecting an operation can generally obtain direct wood costs, or some of them at least, with a fair degree of accuracy: if accompanied by a good description of the operation, timber, etc., these could be worked up into curves of general utility, but they would not be as safe to use as those obtained from the work of special parties, although more generally applicable until a very great deal of work has been done by the latter. Other costs can only be obtained from the books of loggers willing to co-operate, from Towage Companies' rates, rail freight rates, price lists of supply houses, etc.

"In laying out work for investigating parties it is important to remember that the information gained must be worked up into the form most readily available for use in appraisals. Taking the usual items -

"Felling and Bucking - Form 210 meets the case. It might be made up into curves showing hours per 1000 F.B.M. output against average D.B.H. or against average number of logs per thousand. I am of the opinion that the actual hours for which the men are paid, rather than the effective hours, should be used, since these curves should represent the average of many operations, and when using them the hours paid for are what would be figured on. The non-effective time is bound to vary from day to day, even on a single operation, if only for the reason that there is more time spent in walking as the operation progresses and felling is done further from the camp.

"Skidding - Form 211 meets the case for team operations. For practical use I would suggest that curves showing hours per 1000 F.B.M. skidded against average D.B.H. or logs per thousand, as mentioned for felling and bucking, individual curves for maximum skidding distances rather than set distances would be preferable. When using the curves for a projected operation, the average maximum skidding distance would be the most readily used factor. Actual skidding distances are bound to vary from the tree alongside a loading point to the tree farthest from the logging road. For donkey operations, skidding time might be similarly shown, but each setting should be treated as a unit with a maximum skidding distance, the farthest reach of the lines, curves being classified according to volume per acre as well as degree of slope. The area logged at a setting would have to be carefully measured by the investigator and compared with the total scale taken off. This seems an important point as the volume per acre naturally has a very great influence on the cost of skidding.

"Transportation is undoubtedly the most important part of logging, and most money is spent on that branch. The costs of both skidding and hauling require careful investigation. I would suggest the formation of these curves for various standard makes and sizes of engines operating on ground classified for surface conditions and slope as well as for maximum distance and volume per acre. In addition to men hours, the expenditure of fuel, oil and grease must be kept track of and time and material spent on repairs or adjustments both of engine and lines.

"Separate account should be kept of time and material expended on rigging and moving ahead; this will have to be accounted for against the volume of timber yarded to the new position.

"Loading - information on loading time to be worked up into curves similar to the skidding curves. Information should also be obtained as to the average F.B.M. per sleigh and per railroad car load, for various average sizes of logs, since it is the number of car or sleigh loads that affects the cost of hauling rather than the actual scale.

"Hauling - Information is probably already available covering the loads and distances two or four-horse teams can haul per day. Railroad freight cost is a large subject for discussion in a general logging cost paper, and as most Crown timber which will be hauled over a railroad finds the railroad already in operation, costs can generally be obtained beforehand. For our purpose, since railroad construction and maintenance will be allowed for separately, the hauling cost is merely the wage cost of the crew and the cost of fuel and lubricant. This can be kept by an investigating party and the cost in time per car mile evolved.

"Similar Output - Time studies can be made of booming, driving, fluming, chuting, or other method of transportation.

"Supervision and Maintenance - Every man in camp must be accounted for, and their time placed against average output in order to provide figures for the average cost per thousand to be ascertained for similar operations. I am of the opinion that the various parts of an operation should not be segregated in these cost studies, but the typical operations should be studied as units and complete costs for each obtained; all or selected items of these costs could be used for stumpage appraisals at discretion.

"Another item which will have to be studied more carefully in future is the cost of providing for reproduction on forest land. This should be an essential in every operation on such land, but experiments need to be made to discover what is necessary before we can estimate the cost of doing it. Slash disposal, however, must be figured in logging costs with reference to its effect on reproduction, as well as its effect as a fire hazard.

"Similar studies could be made of milling costs, but these can be standardized with fair accuracy.

"The results of such time-output studies of logging costs will not be affected by changes in rates of wages or material, and also will be more reliable than money costs even where these can be obtained from logging companies' books. There is sometimes a tendency in logging accounting to write off investment as soon as possible, by writing off too large a proportion of main line construction cost against the timber logged directly to it, allowing flat rates for depreciation of investment in excess of actual facts, including as administration expenses taxation, insurance, and even salaries which in an appraisal might perhaps better be included in a general per-centage on investment for profit and risk. This is no doubt due to a desire to play safe, to have no more investment on the books at the completion of an operation than is well covered by realizable assets, and to reduce the showing of profits as much as possible to avoid excessive taxation. Costs, therefore, taken from operators' accounts and applied to stumpage appraisals require to be carefully examined in order to

avoid duplication by allowing too large a per-centage rate on investment to cover costs already recognized in detail.

"The method of application of figures taken from curves of direct logging costs such as described is obvious, if we have enough curves made to cover all types of operation. If not, the adjustment is one of individual judgment and can best be done by the cruiser, since it is a question of deciding the per-centage of cost over or under the cost given caused by a difference in logging facilities which can only be properly appreciated in the woods.

"Various methods of application of indirect logging costs are well-known from description in the U. S. Appraisal Manual. The investment method of calculating profit margin is the one we have been using, and it seems to be the most satisfactory where the investment can be fairly accurately ascertained. Perhaps where the rate of depreciation per 1000 F.B.M. can be figured, although the average investment is not clear, especially in smaller operations, the allowance of a per-centage on the overturn to cover profit margin is a more accurate method than making a wild guess at the investment. It is quite commonly used in Railway contracting.

"The per-centage allowed, and the period for which it is estimated the investment should be producing returns, may make an enormous difference in stumpage values. These points require discussion and settlement probably more than any others, if accurate appraisals are to be made.

"What is a fair return for investment in the logging industry? Are the risks much greater than those in many other industries?

"There is possible loss or deterioration of product before marketing. The raw material itself and the investment in equipment may be lost in part or wholly by fire. Labour and material costs vary no more than in other industries. Market fluctuations may be more frequent. Timber is less perishable than some commodities, such as agricultural products, and more than others, such as machinery. How much allowance should be made for operations of a pioneer nature? The pioneer in a pioneer country always expects, and is justified in expecting, possible returns in keeping with the speculative character of his occupation. Has the logging industry passed the pioneer stage everywhere in the Province yet? What should be the effect, if any, of the value to the Province of opening up new territory and logging off agricultural land?

"The period for which returns should be expected also requires definition. Ideally, it should be the period from the time the equipment is bought or taken off a finished operation to go to the one in question, to the time it is again ready for a fresh location. This would presuppose that all expense stopped the moment the logging stopped, and that logging was carried on as continuously as the weather and the nature of the operation allowed. Time lost through uncertainty as to market, labor troubles or inadequate financing should not be reckoned in the producing period of the investment. On the other hand, where logging is confined to certain periods of the year, either the period during which the equipment is unavoidably lying idle

should be included, or the percentage allowed for profit during the producing periods should be large enough to cover the non-producing. For example, a timber sale contract may cover three years, two years may elapse between the start and finish of the operation; during six months of the two years, operations may have been closed down by weather; the actual logging should have taken only six months if the equipment used had been efficiently and continuously operated; the equipment could reasonably have been expected to have been taken from Vancouver and set up on the ground in two months. What period should fairly be allowed as producing returns on the investment involved in such an operation?

"Pro-rating fixed charges by value of species in mixed stands, as described in the U.S. Manual, is essential if we are to give any stumpage value to the least valuable species. It is a fact that though average logging costs may be several dollars more than the selling price of Hemlock, yet it may pay to take Hemlock out with more valuable species. Leaving it would not reduce the fixed investment in railway and machinery, and would increase the cost of logging per thousand, by causing fixed investment, cost of rigging and moving ahead, supervision, etc., to be spread over a smaller volume, even if it did not increase the skidding costs by getting in the way.

"Finally, accurate appraisal requires the use of accurate cost figures for all types of operation, and good judgment in deciding the proper treatment of a logging chance, and applying the proper series of data to its cost. It presupposes accurate cruising and estimation of value of product.

"Each appraisal really requires the personal study of the area by its maker, since many of the problems it involves are directly dependent on local factors which cannot properly be appreciated by an estimator, however expert, who has never seen the chance. Rangers appear to realise this, but they do not always take advantage of their personal knowledge to estimate and report details of a timber sale appraisal which can be checked in the office. Our object should be to obtain exact figures for costs of details of all types of operation, and to have expert forest engineers in our Rangers to apply them with judgment to the valuation of standing timber."

Mr. N. MOORE (District Forester Cranbrook) opened the discussion on Mr. Mulholland's paper. He pleaded lack of opportunity to properly study the subject, and proceeded to demolish the formulae on pp. 17 and 18 of the Stumpage Appraisal Manual. These formulae, said Mr. Moore, were impractical in all cases, and he would quote figures in support of that statement (which he did).

"For the last three years the Lumber Companies have been selling their product on a buyer's market", said Mr. MOORE, in reference to the selling price of lumber which figures importantly as a factor in Stumpage Appraisals. Consequently, he said, the figures given by the industry could not be taken as a fair basis. "I asked the Secretary of the Mountain Mills Association" said Mr. Moore, "As to their average selling price, and they

quoted an average selling price of \$22.00. It was discovered afterwards that the average selling price was \$26.00. Now, if the Secretary of the Mountain Mills Association cannot estimate closer than that to the average selling price, I think it would be a dangerous basis for us to use."

A much closer basis, he thought, would be to base our estimates on the actual costs on similar operations. We can obtain the information from the operators, and generally speaking he found their figures very reliable. He had proved this in several instances. "We should have a minimum upset price; and when we can't get that we should let the timber stand."

Mr. C.D. ORCHARD followed in support of Mr. MOORE'S criticism of the formulae. "We must first sell this system of Stumpage appraisals to the Rangers themselves" said Mr. Orchard, who admitted that he himself did not greatly favor it at first. "My first objection was that the manual called for a stereotyped system. This seemed wrong; I did not like to be tied. Also, if the Ranger attends to his other duties, he has not the time to carry out the rules laid down in the manual. Then again, there seemed to be a lack of data to work on, which lack would have to be supplied and probably with very great difficulty. Another objection was that there was so much guess-work involved; for example, we would have to guess at the average selling price for the duration of the operation, and the final result would really only be guesswork. Might we not, then, just as well guess to begin with?"

"However," resumed Mr. Orchard, "I find that the uniformity which will be secured will, on further reflection, be a really good thing. The Ranger usually is dealing with the same operators, and once the data is collected and submitted, a little checking occasionally will be all that is necessary. I find, too, that if the operators are properly approached - that is to say, with a certain amount of tact and discretion, and if they are told why the information is wanted - they will furnish it readily enough, in most cases. After all, the Appraisal is only a system of checking up our own work, and a means of acquiring and tabulating data as a basis for comparison."

Mr. G.P. MELROSE defended the formula, and explained the manner in which it was to be applied, and a general discussion followed. It was important, Mr. Melrose said, that in collecting data we must not take any figures that might be offered, and what figures were obtained should be obtained only after conveying a correct idea of the purpose for which they were required. Great care would have to be exercised, if we adopted the suggestion of a minimum upset price; in the Interior where there is no really competitive market for logs, we should simply be bonussing the mill-men, he thought. An open competitive market is the only basis we can possibly take; by and by, when we have the data, we shall be able to check up what we think the stumpage is worth.

Mr. Orchard's final point had possibly occurred to many of us; but the system is new to us, and we must allow it time to develop. The great point, so far, and an extremely gratifying one was that it had set everyone studying and tabulating their results - and we are getting remarkable results.

L.R. Andrews agreed that it was accomplishing its purpose in that regard. He favoured the idea of a minimum stumpage reservation in cases where we considered we were justified in disposing of the timber, but the upset price should be the result of our own judgment and a thorough appraisal. In other districts, a minimum upset price might be set for that district. It seemed to him, he said, that where certain districts were to be opened up and Crown timber thrown on the market, there were a number of important factors to be considered. Certain types of stand, for instance, cannot be logged today without gutting the show; in such districts we should place a stumpage price that would be absolutely prohibitive, to prevent a glut on the market. Certainly in some ways a minimum upset price would be sound policy.

Mr. R.C.St.CLAIR, Mr. P.S.BONNEY, Mr. MULHOLLAND and Mr. J.M. GIBSON all took part in the general debate on this subject.

Mr. St.CLAIR pointed out that the rules laid down in the Manual were not to be regarded as immutable; that the whole idea was to accumulate a quantity of reliable data from actual operations presented in a uniform way. There were, he said, many files of data collected in 1912, 1913, and 1914, which were of no value today for the very reason that there was no uniformity, either of the data collected or in the way in which it was presented.

(At a later state in the proceedings Mr. CAVERHILL ordered the appointment of Committees to prepare and place before the meeting Resolutions on each of the papers read, in which would be set forth their ideas as to how the various matters should be handled, so that some concrete results might accrue from the Conference. To preserve the continuity, the Resolution will be quoted immediately after the general discussion on the paper to which it refers.)

Report of Committee on 'STUMPAGE APPRAISALS'

1. Whereas it is considered that the methods of stumpage appraisal outlined in the "Instructions for stumpage Appraisal on National Forests" are the best yet brought forward; and

Whereas the study and pursuit of these methods tend to instil a more complete knowledge of logging costs in the field officers;

It is therefore RESOLVED that this meeting is of the opinion that the methods so outlined should be used as much as possible in appraising timber sale stumpage.

2. Whereas the present form 120, 'Timber Sale Cruise Report' is considered inadequate for the proper reporting of all data required in appraising timber sales; and

Whereas the form is inconvenient as to make-up, in that field officers find it difficult to type the information on the form;

It is therefore RESOLVED that this meeting is of opinion that -

(a). Form 120 should be revised so as to cover the information required in an appraisal after the manual of Stumpage

Appraisal.

(b). The revised form should be made up as several loose and separate sheets, preferably with printing on one side only.

(c). Such form be submitted to all District Foresters for comment before printing, and

(d). For large sales this form be used as an outline or a separate outline be prepared, to be followed by the reporting officer making his report on separate sheets the length required.

3. Whereas it is sometimes desirable that timber sales be withheld; and

Whereas the principle is recognised that minimum stumpage prices for certain species in certain districts should be set;

It is therefore RESOLVED that this meeting is of opinion that the question of minimum stumpage prices should be seriously considered.

4. Whereas the explanation of the formula for figuring the average profit-bearing investment on page 17 of the Appraisal Manual is not entirely clear;

It is therefore RESOLVED that the words "N = number of years in use" be changed to read "N = number of years in use on this particular operation," and that proper notification of the change be sent to all officers using the Manual.

This report was accepted with the exception of Clause 3, which clause gave rise to considerable debate and divergence of opinion. Finally, on the motion of Mr. G.R.NADEN, it was tabled for consideration in the interval between this and the next Conference.

The paper on FIELD INSPECTIONS, it was thought, did not call for further comment.

Ranger Meetings in the Interior came up next, and the Programmes were read and approved. The Chief Forester had suggested, Mr. St.CLAIR stated, that the Assistant District Foresters should attend these meetings in preference to the District Foresters.

Programme for Ranger Meeting at Prince George.

1st Day -

9.00 a.m. The Fire Season of 1922 and its Lessons.

T.W.Brewer.

9.15 General discussion.

10.30 1922 Amendments to the Forest Act. C.S.Cowan.

10.45 Questions and Discussion

12.00 Adjourn.

2.00 Public Education in Fire Prevention. C.J.Haddon.

2.15 General Discussion.

3.30	Reduction of Forest Fire Hazard.	R.H.Leighton.
3.45	General Discussion.	

2nd Day -

9.00 a.m.	Forest Management, its Object and Importance.	R.C.St.Clair.
9.15	General Discussion.	
10.30	Land Classification.	J.M.Gibson.
10.45	General Discussion.	
12.00	Adjourn.	
2.00 p.m.	Timber Sale Administration and Appraisal of Values.	J.E.Mathieson.
2.15	General Discussion.	
3.30	The Objects of Logging Inspection.	W.Langmuir.
3.45	General Discussion.	

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Programme for Ranger Meeting at Nelson.

1st Day -

9.00 a.m.	The Fire Season of 1922 and its Lessons.	F.A.MacDonald.
9.15	General Discussion.	
10.30	Amendments to the Forest Act.	C.S.Cowan.
10.45	Questions and discussion.	
12.00	Adjourn.	
2.00 p.m.	Public Education in Fire Prevention.	N.Moore.
2.15	General Discussion.	
3.30	Reduction of Forest Fire Hazard.	M.V.Allen.
3.45	General Discussion.	

2nd Day -

9.00 a.m.	Forest Management, its Objects and importance.	R.C.St.Clair.
9.15	General Discussion.	
10.30	Land Classification.	H.Oldham.
10.45	General Discussion.	
12.00	Adjourn.	
2.00 p.m.	Timber Sale Administration and Appraisal of Values	L.S.Hope.
2.15	General Discussion.	
3.30	The Objects of Logging Inspection.	J.B.Conway.
3.45	General Discussion.	

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FEBRUARY 20TH.

The Chairman called the meeting to order at 10.15 a.m. and invited P.S.BONNEY (District Forester, Prince Rupert) to present his paper on

"THE COLLECTION OF ACCOUNTS, Methods and Policy
of Enforcement."

"When this subject was assigned to me I assumed it was not intended that an attempt should be made to deliver an address, but rather that I should deal with the question in a sketchy manner with a view to introducing it for a lively discussion out of which each District Forester will get some real meat of sound advice and proven practice which will strengthen, comfort and encourage him in his unending struggle against frozen accounts.

"Prior to the organization of the Forest Branch the collection of accounts was administered by a group of Timber Inspectors whose methods and policies were not entirely satisfactory. The formation of the Branch resulted in the division of the Province into Forest Districts and consequent segregation of accounts on that basis. The responsibility for collections was then gradually assigned to the various District offices subject to the supervision and inspection of the Victoria Records Office. During the ten years, subsequent to the establishment of the Forest Branch, a system and policy of collections have been developed which are functioning with reasonable efficiency. While the policy is elastic and variable in its local application it is founded on the principle of authority as enacted in the Forest Act. The method or system of collections, on the other hand, is administered on the principle of reason and sympathetic consideration. If the liquidation of accounts fails on account of our present method and policy, and necessitates the elimination of the principle of reason from our business of collection, the resultant policy would be deplorable as it would be rigidly administered on the principle of authority only, which might work excessive hardship upon the industry.

"All Forest Branch accounts are simply statements covering service rendered or the transfer of certain equities, rights or privileges from the Government to certain individuals. They consist of bills for royalty, stumpage, scaling fees and expenses, trespass charges, seizure expenses, rentals, forest protection charges, transfer of property, supply of marking hammers, miscellaneous services, and expenses incurred in fire fighting. All the above mentioned accounts are of the same status as regards due dates, being due on date of issue, but methods of collection and the legal proceedings vary. The Forest Act clearly defines the priority of charges covering royalty, stumpage, rentals, forest protection, scaling, trespass and

seizure, and empowers the Minister to liquidate them by sale of assets involved. Miscellaneous, general, and fire accounts are collectable by civil action in a competent court.

"Methods of collection may be classified as follows: Voluntary payments, polite letters coupled with follow-ups, demand or threatening letters, interviews, temporary or private seizure and public seizure followed by sale of assets where necessary.

"The first mentioned class requires no comment except to remark that this method pays the biggest dividend in the form of net revenue to the Treasury. The next two methods constitute the art of collection by correspondence which may be described as a combination of gentle persuasion, firm persistence, and discreet pressure. Lumbermen, as a class, are notorious for their laxity in correspondence and also for their tendency to sit tight in the face of official demands by letter for payments with the belief that no drastic action will be taken in any case.

"The tactics of the professional collection agency, which, by a clever series of letters, builds up in the debtor's mind a picture of a tiger ready to spring, cannot be resorted to by us, servants of the people. Our letters requesting payments must be tactful, discreet, straight forward, and always within the regulations. To my mind collection by correspondence is the most unsatisfactory method because of the overhead costs and loss of time involved and the relatively low returns secured.

"Perhaps the most effective method, from all angles, is that of interviews at which the Forest Officer frankly and firmly discusses the liabilities with the debtor and investigates his ability to pay. An equitable basis for liquidation of accounts is mutually agreed upon and a clear-cut decision made regarding seizure proceedings in the event that the agreement fails.

"The method of temporary or private seizure is very effective and gets results in most cases without the necessity of official seizure. It is particularly valuable in the liquidation of old arrears and the prevention of new accumulations. In the Interior, where sawing operations are usually carried on during the open season only, the District office carefully scrutinizes each individual case, and on the basis of each delinquent mill's estimated cut for the season, a rate per thousand is fixed which will be paid on shipments as made. The rate is fixed high enough to provide a margin of safety and varies from one to ten dollars, depending upon the amount of arrears and the estimated current accounts to be issued as sawing progresses. An agreement is entered into with each operator that he will make bi-monthly statements of cars shipped

and attach his cheque covering these period shipments at the rate per thousand agreed upon. It is distinctly understood that delay or failure in making progress payments promptly will result in seizure. The majority of small outfits are favourable to this method because it enables them to liquidate the accounts as rapidly as sales are made and, at the same time, the Department is assured settlement before the lumber cut is entirely moved or exported out of the Province. In the Fort George District, during 1922, we were able to collect our total current accounts amounting to about seventy-five thousand dollars and reduce ancient arrears by about fifteen thousand or 33% by using this method. A number of seizures were necessary in cases where we failed to get a reasonable compliance with our shipping agreements.

"The last method, being that of public seizure, is of course the last resort, and is only followed where such action is necessary to protect the Department's interests. After long and earnest efforts to secure settlement by the less drastic methods one feels justified in seizing to enforce liquidation, but this remedy cannot be generally applied. By injudicious seizure one may precipitate a crisis in a normally sound firm and throw it into insolvency. The responsibility of using the power of seizure is upon the District Forester in most cases and if he fails to use this power with wisdom and discretion the demoralizing influence of constantly accumulating arrears will inevitably weaken his administration.

"The method of collections covering ties, poles, posts, and other minor products varies somewhat in each District. The system with which I am familiar and which is giving excellent results is as follows:

"An arrangement was made with the Canadian National Railways that they would not accept for billing any cars of posts, poles, piling, mine props, or cordwood until the shipper produced a clearance signed by the local Forest Officer. These clearances are issued in triplicate by the field officer upon receipt of payment in advance of royalty, stumpage, etc. The scale of the shipment, car numbers and initials, name and address of shipper, consignee and destination, and area with timber marks are listed on the clearance, the original of which is handed to the shipper, duplicate to District Office with remittance, and triplicate retained by issuer. Payments are made by advance deposits with District Forester, by cash, by Post Office order, by draft, or by unmarked cheque, which field officer is willing to accept. Clearances are withheld in some cases until a proportional amount of arrears, plus current charges, are paid.

"Collections on ties are made entirely through the District Tie Agent under an agreement whereby the Railway withholds ten cents per tie from every contractor out of which

Forest Branch accounts are paid. The accounts are issued on the basis of monthly inspection reports made by tie inspectors and checked by returns from operators and field inspection by rangers. This system has been in practice for two years in the northern districts and is giving excellent results.

"The question of manner or kind of payment is one of importance and productive of considerable grief if not carefully handled. Payments made by cash or its equivalent in post office orders, bank drafts, express orders, or certified cheques are obviously to be desired and demanded in most cases. If a District office accepts commercial paper in the form of post dated cheques, sight drafts, or time drafts for application to accounts, it appears that commercial and banking laws then become operative and our priority of lien is weakened if not waived. It is a risk which we, as civil servants, are not expected to undertake, for it becomes personal in responsibility. Last year a campaign for collection was pushed in the Fort George District and I did accept payments of many thousands of dollars in the form of post dated cheques, sight drafts and time drafts in cases where I had definite knowledge regarding the business standing of the firms involved. Fortunately all of this commercial paper was ultimately collected upon, but not without great trouble and risk. Personally, as a civil servant, I am not keen to accept similar risks again.

"Payments on accounts are also arranged by orders from debtors upon their responsible creditors or by arrangement with local bank managers handling their accounts. As opportunity offered we have collected a number of frozen accounts by getting orders on the Public Works Department to whom the debtor was delivering lumber or on the General Tie Agent, with whom the debtor had a tie contract. The annual tie operations offer opportunity to clean up a number of the small delinquent accounts, particularly against small operators who usually take on tie contracts from head contractors on whom they are willing, if pressed, to give an order for settlement of their previously accumulated sawlog royalty accounts.

"In order to illustrate the methods and policy of enforcement of collections, it might be well to review briefly a few typical cases with which I have had experience and which will no doubt be similar in principle to your problems.

Case No. 11.

"The XYZ Lumber Company, operated by a number of Edmonton lawyers and doctors, who entered into the lumber game in the hope of a quick clean up, was hopelessly mismanaged and piled up arrears. We seized the plant and a million feet of logs in the bush. The bush scale plus current jack-ladder scales

increased the arrears to about \$10,000. Prior to seizure the owners had realized there were no Bonanza profits in lumber and had systematically milked the business to such an extent that they piled up \$80,000 in liabilities of which \$13,000 consisted of workmen's wages and \$10,000 charges for stumpage, royalty, rentals etc. The plant was situated on a mill-site which the XYZ Company were presumed to have leased, but they never registered the lease. The mill-site was owned by one of the former managers who was playing a hold-up game on the Company and who, after seizure, sat tight in an attitude of watchful waiting. On the appeal of lawyers representing wage claimants, the Department released seizure and turned over the property to a liquidator, on the understanding that Government charges would be paid in priority out of returns realized. The liquidator sold about \$10,000 worth of his liquid assets at ridiculously low prices and after deducting excessive expenses incurred, turned over \$1,000 to the Branch. The mill-site owner then threatened to foreclose on the plant, which was on his land, and the liquidator, who had already stripped the lay-out of most of its liquid assets, applied to the Alberta Court for release, which was granted. The Department then re-seized the assets and advertised them for sale, but no tenders were received on account of the indefinite status of the mill-site. We then held it under seizure for over a year, during which the Attorney General's Department finally ruled that we had no power to seize the land on which the mill was situated. Last month we advertised it as a moving proposition at a reduced upset price and sold it on the basis of 10% down and balance payable in three equal annual instalments.

"One of the points which I wish to make in this review is that the workmen lost over \$13,000 which they had filed as liens on account of the accumulated stumpage and royalty arrears which have statutory priority. There is a growing public sentiment which is favorable to the elimination of the established priority of accounts.

"Cases such as the above, in which the moral justice of seizure proceedings miscarries, tend to augment that sentiment. The second point to be mentioned is the fact that in making a seizure of a plant the Department acquires only the equity which the delinquent company has legally registered in the mill-site. If the XYZ Lumber Mill and site had been available for sale as an operating concern, the Department could have realized enough to satisfy the major portion of wage claims as well as prior Government claims. I believe it is the concern of every District Forester to scrutinize the affairs of each delinquent operator with a view to prevent any undue accumulation of Government arrears and thus protect the claims of the workmen who, in many cases, are unable to protect themselves.

Case No. 2.

"The X Lumber Company went into liquidation in 1918 with royalty arrears of some \$1700. One of the stock holders organized the Z Lumber Company in 1922 and leased the mill from the liquidator. This firm during the previous winter, had logged about six million which we bush scaled and billed for a total of about eight thousand. The new firm was financially weak and its 1922 sawing operations were a tragedy of law-suits and overhead expenses. It was agreed by the liquidator and the Department that the new firm would pay up old arrears plus current accounts out of the 1922 cut, but on account of the difficulties of financing pay rolls and urgent operating expenses, no reasonable effort was made by the Z Company to carry out the agreement. Private seizure was made on the basis of advanced payments on shipments at \$5.00 per M. on lumber and \$1.25 per M. on lath. Then followed a series of frenzied finance out of which we netted a few thousand dollars together with several thousand in the form of commercial paper, such as sight drafts, time drafts and post dated cheques. By carefully maintaining a substantial margin of safety of lumber stock as against shipments we were able to avoid the crisis of public seizure until the bulk of logs was sawn, and until the due dates of the commercial paper had passed. Unfulfilled promises, threat, and appeals from the Z Company finally necessitated a public seizure, which resulted in a full settlement of the current accounts by a Winnipeg wholesale lumber firm which was heavily interested. Then came the question of liquidation of old arrears against the original X Lumber Company which the new Z Lumber Company refused to accept as a pressing liability. The new cut lumber could not legally be seized for these arrears which had been accumulated on 1918 operations. The difficulty was overcome by privately seizing the planers which the new Company had to use in order to prepare their lumber for shipment, and they were allowed to use the planers on payment of \$5.00 per M. on shipments.

Case No. 3.

"This third case illustrates a method of securing settlement through a bank without the necessity of public or private seizure. The A.B.C. Lumber Company accumulated arrears during 1919 and 1920 of \$5,000. They did not saw during 1921 but winter logged about one and a half million, which was manufactured during the season of 1922. The bank had made heavy advances and in order to protect their interests they arranged to control all sales and expenditures through the local bank manager. An agreement was made with the bank whereby they would pay \$5.00 per M. on all shipments as made for application

on arrears and current accounts which totalled about \$8,000. After the firm had shipped about one million feet on which we had realized \$5,000, the plant was destroyed by fire. Insurance to the extent of \$24,000 was carried and made payable to the bank. The question then arose as to whether the Department should take legal action to enforce complete settlement out of insurance funds. The operator produced plans for reconstruction which he promised to carry through if the Department would carry over about \$2,000 arrears and thus enable him to apply his insurance funds for wiping off bank advances and making a partial settlement to other pressing creditors. The balance of the lumber stock which had escaped fire was shipped and the Bank paid up on the total shipments at the rate agreed upon, which reduced the arrears to about \$2,000 and the Department agreed to carry over these liabilities to assist in reconstruction. If the operator fails to rebuild the Department's equities are protected by the mill-site, fire damaged machinery and certain items of plant which escaped fire, but these assets are not liquid and therefore difficult to realize upon. The policy followed in the above case reflects the spirit of co-operation and sympathetic consideration which, to my mind, is necessary to successful administration.

"It has been said that the Forest and Royalty Acts have made the Department a partner in the industry and on this basis there should be a mutual understanding that both partners will conscientiously fulfil their obligations. A certain section of the industry are given to regarding stumpage and royalty charges as liabilities which the Department should carry along for an indefinite period, and not demand settlement until all other private liabilities are taken care of. This sentiment coupled with the inevitable depressions and readjustments which the industry is subjected to has resulted in an accumulation of arrears of varying amounts from a half to three-quarters of a million dollars being carried for unduly long periods. Direct losses to the Government on account of interest charges are obviously heavy and would offset interest payments on a very considerable bond issue, which possibly in certain years, would not have to be floated if these arrears were liquidated. The policy of the Department is to speed up collections and gradually to approach a system of immediate payment on receipt of account, as is evidenced by the elimination of the time-honoured sixty-day period of grace from scale and royalty accounts. A clean sheet on collections is greatly to be desired, but if the Forest Branch is to function as a limited partner with the industry, our policy of collections which is founded on the principle of authority must continue to be tempered with the principle of reason."

The Hon. T.D. PATTULLO, in commenting on Mr. Bonney's paper, said the Government must go on and people must pay up.

"I have been insisting on much closer attention to collections," he said "and the cases to which Mr. Bonney refers should never have been allowed to occur. The Policy of the Department calls for closer collections. We are not out to finance anyone, and while it is extremely unfortunate that other creditors, notably the workmen, should suffer, sentiment in this respect must be ignored. Operators who are not in a position to finance their undertakings themselves or through the Banks ought not to be engaged in the business; they are bound to go to the wall sooner or later, and probably the sooner they are eliminated the less injury will result."

Mr. CAVERHILL pointed out that the fiscal year was nearing its close, and every effort in regard to collections must be made during what was left of it.

He then called upon F.A. MacDONALD (Nelson) to resume the discussion of Mr. Bonney's paper.

Evidently, said Mr. MacDonald, collections from the Nelson district were not coming in quite to the satisfaction of the Head Office. He injected a little dry humour into the proceedings by his reference to the instructions he had received in this regard. "The matter is apparently perfectly simple," said Mr. MacDonald. "The system as contained in my instructions was to 'See these people again, obtain their cheque, and forward it to this office.' It would seem, however, that somewhere a link in the chain of operations is missing, as the results obtained at Nelson were not at all commensurate!"

A number of the methods employed at Prince George had been tried also in Nelson, notably the control of car shipments, which have made it possible for us to control outstanding balances within reasonable limits. A good many of the smaller operators were operating without any visible assets. Another system which had been tried with considerable success was the centralization of collections; that is to say, the buyers declined to accept the product without a clearance from the Branch.

Some of the mills, too, were being heavily financed by the Banks, and on placing our side of the question before the Banks it was generally possible to secure their co-operation in keeping the operator's account down.

Mr. Caverhill outlined the chain of responsibility of the maintenance of Revenue which, he said, was the Minister, himself, the Records Office, and the Field. He then called upon Mr. N.F. PITE, (Records Office).

Mr. Pite outlined the situation in regard to revenue.

"Often," he said, "the Records Office had no knowledge of the local conditions affecting the accounts. The bulk of the arrears which are now proving so difficult to collect, he thought, probably had their origin in the 'boom' days of 1919/20. The important point now, however, was to watch the accounts and see that these arrears did not increase. Drastic action might just as well be taken to begin with; nothing is to be gained by deferring it."

Mr. Bonney had referred to the Government's lien. This must not be sacrificed until something equally protective could be devised to replace it. Royalty and Stumpage were as much an obligation as Wages, and should be so regarded.

There were a number of small accounts (incurred for the most part by 'straw men') which were apt to be overlooked. They should be kept in mind, and collected if ever the opportunity arose. ("They are the worst" interpolated Mr. MacDonald. "They have nothing with which to pay as a general rule.")

"Collections have certainly been much better this year" went on Mr. Pite. "Outstandings have been reduced by \$67,000. Charges have been increased \$110,000 over the corresponding 10 months of last year, and Collections have increased \$230,000 over the same period."

Mills which carry a good stock may be regarded as safe. The point is whether or not the insurance on these stocks should be in favor of the Department. He did not think the lien covered this. Mr. MOORE said it did if the mill was under seizure, but this remained a moot point.

A.E. PARLOW (Vernon) followed. He was not at all sure that the Railway Company had authority to refuse shipments, although Mr. Bonney had indicated that they could do this by way of protecting their own interests.

Mr. BONNEY explained that in his district the local Divisional Superintendent had considerable authority locally; that while the Railroad, as common carriers, could not refuse to accept shipments so long as they had the cars and the shipper had the wherewithal to pay the freight, at the same time they could require a clearance from the Forest Branch before shipping. "What about demurrage?" queried Mr. Parlow. "To avoid demurrage" explained Mr. Bonney, "the first shipment was sent forward, but subsequent shipments were refused by the Railroad. This may not be the general practice, but it is done in the Prince George district and it is most effective."

The acceptance of commercial paper, such as post-dated cheques, Mr. BONNEY agreed, might perhaps weaken our position, but they were nevertheless a valuable means of

speeding up protection.

Where large amounts were involved, Mr. Bonney, explained, it was his almost invariable custom to have the amount paid by a number of cheques for smaller amounts totalling the sum involved, which smaller cheques could be presented and taken up as the operators' finances permitted. The Banks, he said, made no provision for covering post-dated cheques, and some such arrangement as he had outlined was necessary.

So far as he could gather, the order of priority was the Poll Tax, Stumpage and Royalty, other taxes, machinery liens and workmen's liens.

Mr. O.B.PETERSON stated definitely that there was no doubt whatever in regard to the Government's priority for Stumpage and Royalty. The Government's claim, he said, unquestionably came first; workmen's liens next. The best legal authority had been consulted in this, and the point was established.

Bad debts, he said, were sometimes written off, but only when they were indubitably bad. They were written off the current ledgers, but were still kept on record to be collected if the chance should ever arise.

J.D.BOYD (Cariboo) said that in his case the situation was somewhat different. Most of his arrears were in Grazing fees, where a man bought a permit to graze and that consequently the seizure did not apply. To prosecute for trespass seemed to be the only remedy. Not only was there no authority under the present Grazing Act for confiscation of the man's stock, but the legal tangle which would result from such action would be serious.

E.B.PROWD (Kamloops) mentioned that in his district the Stockmen's Associations gave great assistance by collecting from their members the grazing fees as well as their membership dues.

"A point upon which I would like to be informed" he said, "is in regard to the disposal of logs left in the woods after the contract has expired."

F.D.MULHOLLAND mentioned that this was a fruitful source of trouble in the Vancouver district, and at a later stage in the proceedings the Chief Forester admitted that the problem was still unsolved, but that a solution seemed to be in sight.

C.S.COWAN moved, and P.S.BONNEY seconded, that the thanks of the meeting be conveyed to the Hon. The Minister of Lands for his cordial invitation to the visiting foresters and their wives to attend, as his guests, a performance of "The

Merry Widow". This was responded to with enthusiasm.

R.V. STUART resumed the discussion. One way out of the trouble of abandoned logs, he thought, would be to increase the deposit on the Timber Sale.

"There is a growing feeling of hostility," he said, "in regard to the Government's lien, especially among hardware and equipment men in Vancouver; but I certainly feel that it should be guarded very jealously." The lien, he said, had the best legal authority behind it and should certainly be preserved.

E.C. MANNING pointed out the difficulties attending a rigid enforcement but agreed that our attitude was the correct one.

C.B. PETERSON rose again to emphasize that accounts should not be allowed to lapse into such a serious state of arrears. That was really the root of the trouble. He pointed out, too, the importance of acknowledging receipt of communications from the RECORDS Office in regard to outstanding accounts. The RECORDS office should always be kept advised of what action had been taken.

G.P. MELROSE intimated that the adoption of the U. S. Forest Service system of requiring a deposit based on the operator's estimated monthly cut might help.

C.S. COWAN thought much of the trouble was due to the attitude of the public that the Government's claims should come last; he had found that the same thing applied in regard to fire-fighting costs.

P.Z. CAVERHILL outlined the situation in regard to Stumpage and Royalty. The Government, he said, was in no sense on a partnership basis with the operators; they did not seek to participate in the operator's excess profits and consequently could not be expected to share his losses. Too much credit was the real trouble, he thought. Operators found it too easy to finance their operations on a credit basis. Who then is going to take second place? No one wants to, but we hold the preferred position today, and should most certainly retain it.

A periodical statement of outstanding balances (say every three or every six months) would be of assistance in keeping the Records office advised of the standing of each individual case.

Report of Committee on "COLLECTION OF ACCOUNTS".

(1) That the continual following up of accounts in arrears between the Records office and the District Offices is a source of friction, and the same end could be attained were the monthly statements sent out by Records office made in duplicate, one copy to be noted by the District Office and returned immediately to Victoria, supplemented by a letter explaining the more complicated cases.

(2). Commercial paper, such as promissory notes or drafts, cannot be accepted, as by so doing the lien conferred by the FOREST ACT is waived during the life of the instrument, and the hands of the Department are tied in the event of action being necessary. Furthermore, it is not within the power of any Departmental official to accept such means of payment.

(3). The power of private seizure, enforced after usual efforts have failed, is the most effective weapon against frozen accounts, and should be used more extensively inasmuch as it avoids the tragedy of public seizure, and the economic losses attendant thereon.

(4). The system of payments in advance, and clearances on shipments of minor products by doubtful parties of doubtful financial standing should be enforced. In many cases, the shipment referred to is the only available asset of the operator.

(5). In certain aggravated cases, a strong letter from Head Office direct to the operator may be productive of results; and District Foresters are requested to advise Victoria whenever such action is desired.

(6). In view of the improved conditions of the lumber market, and the general revival of industry, the present would appear to be a favourable time to make a special drive to clear off all arrears, and to institute the practice of having accounts paid immediately upon receipt.

With minor amendments and the elimination of Clause (3), which was held to be merely a statement of fact, the Report was accepted by the meeting.

J.L.ALEXANDER was then called upon for his paper on "Practical Results of Investigative Work on Western Yellow Pine"

"Forestry as a business depends for its success on the growth of trees, and before a sound system of management can be adopted it is necessary that basic data be collected which will show the effect of the different factors which influence production.

"Owing to the decreasing supply and the increasing demand for Western Yellow Pine and the importance commercially in the Southern Interior, it was considered advisable to study this species during the past summer.

"In order that the effect of conditions throughout the entire commercial range might be ascertained, investigations were carried on in the main pineries from Chinook Cove north of Kamloops to Gateway on the International Boundary.

"Yield tables give the fundamental data required for the determination of the value of forest lands, the

appraisal of damages to forest property, the choice of rotation, the choice of species and the relative profit from expenditures for all forestry operations on different sites. At present the valuation placed on immature timber is much a matter of guess. Having a yield table reliable data is at hand for drawing more definite conclusions. An operator may be holding immature timber. If a yield table is available the advisability of holding can be worked out with accuracy. In determining yield there are three main factors: volume, age and area. Let us deal with volume first.

"Under European conditions the entire tree may be utilized and the cubic content is recognized in some commercial unit. With us, only the volume which is merchantable is of practical importance and should be expressed in the prevailing commercial unit "board feet". Trees under ten inches D.B.H. are not merchantable and are not considered in the yield table. The D.B.H. and total height of all merchantable trees in plots averaging 1/2 acre were measured and the volume of commercial timber deduced from a volume table based on total height and D.B.H.

"Secondly, age was determined from borings and seedlings analysis.

"The yield of all the plots was converted to the common unit of one acre. The relative productive capacity of an area is expressed by the height, growth of dominant trees at the same age. On this basis three site classes were recognized. The yield table was finally made up by Baur's Method.

"The data showed that yellow pine grows very slowly in height at first. On Site 3, quality it requires twenty years to grow six feet. Then there is a period of rapid growth during the pole stage and a gradual falling off at maturity until height growth practically terminates. Both height and diameter growth varies with the different sites. On the various sites diameter growth was found to be an expression of age, but varied greatly with the site quality. The number of trees showed a rapid decrease at first, the mortality becoming less and less towards maturity. On Site Three at any age more trees existed than on Site One at the same age, but the trees on Site One showed a larger diameter. This variation in the number of trees makes stem analysis practically useless in predicting yields.

"Owing to the great variation in density of stocking and the changing conditions in Yellow Pine stands, it was considered advisable to construct a normal yield table as a basis of comparison which would be of permanent value rather than an empirical table which would only be applicable to present changing conditions.

"In addition to these sample plots, strips were run through average stands which will form the basis of an empirical table giving the average yield under the present changing conditions.

"To check up on the yield tables and other data gathered during the past summer, eight permanent experimental plots, which can be re-examined at periodic intervals of five or ten years, were established. The boundaries were marked by square posts protected by cairns or earth. All trees over 4 inches D.B.H. were numbered with a metal tag and the D.B.H. measured with a diameter tape, and height with chain and abney. The position of each tree and, where possible, reproduction was charted using a plane table. A full description was made of each plot. It is proposed to cut over certain of these plots under different systems and study the growth of remaining trees and the reproduction obtained by seed trees left.

"Perhaps the most important problem in yellow pine is how to perpetuate the species rather than its main associate Douglas fir. The latter species in the Interior Dry Belt is very subject to shake, and falls to pieces when sawn and has to be written off as a loss against the more valuable pine. Fir is a more prolific seeder than pine and can endure more shade. On the moist sites fir is supplanting pine, while on the drier sites pine is holding its own. The studies show that on the margins of the pine areas fir is encroaching. Larch is often supplanting pine in the virgin pine larch mixture.

"All countries pass through the same stages of forestry development, and the first and most essential is Fire Protection. A Swedish forester, before the pulp and paper convention at Toronto three years ago, stated that in Sweden they have no fire protection system; they don't need it.

"Even though we have passed through a very unfortunate summer it seems that the Forest Branch has perfected its fire protection organization sufficiently to recognize that fire protection should not be the only consideration in the management of our woodlands. This applies to areas stocked by other species as well as our pineries. A large percentage of the Province is only fit for growing trees, and it is our duty to perpetuate the most valuable species as far as practical.

"In Yellow Pine two conditions have existed after logging our virgin stands. Either considerable slash remained on the ground, sometimes perhaps increasing the fire hazard, or the area cut has been broadcast burned. In the first case, where slash was left, beetles found a good breeding place, multiplied very rapidly and at present are depleting our stands to a greater extent than operators and fire combined. In the Princeton area 150 million feet has been killed, resulting in a loss of over Three Hundred Thousand Dollars in potential revenue, and on the plots studied 7% was killed by insects. Investigations were made and it was recognized that the leaving of slash upset the balance of nature and favoured the increase of beetles. Broadcast burning was the cheapest way of getting rid of the debris, so large areas were burned after logging

with no consideration for future growth. In many cases all potential seed trees had been cut and the tiny advanced reproduction destroyed by the fire. At present we have waste lands yielding no returns.

"During the summer regeneration strips were run through areas burnt over, and seedlings counted and a summary made. On areas not broadcast burned 83% pine and 17% fir existed, while on areas burned, 79% fir and 21% pine came in. On areas burnt over averaging six years ago, only 10% of the number of seedlings existed as on areas not burned. In most cases not sufficient trees were left to reseed the area, and these were mostly deformed. 13% of these were found to be dead on burnt over areas. Yet our policy in the past, in many cases, has not taken regeneration into consideration. But we have passed this stage and must look into the future, and the indications are, from the past summer's study, that the matter of brush disposal is of most importance in perpetuating our pineries.

"All advanced pine reproduction should be guarded. I would suggest that the brush be compactly piled on the stumps or away from young growth and burned after the first fall rains, or at a time when least damage will be done to advanced reproduction. It would not be advisable to practice spring burning on account of the damage from hang-overs. It would be advisable to have the slash piled by the operators and burned under the direct supervision of the Forest Branch, so that the fires shall be properly controlled, and otherwise broadcast burns are very likely to develop and the future reproduction be mostly fir.

"On 46% of the plots studied during the summer, practically no reproduction existed. In these cases provision should be made for natural seeding.

"The seed of pine germinates in the fall, resulting in a heavy loss from winter killing. Trees under fourteen inches do not bear heavily. The seed from young, vigorous trees has a higher germinating percent than that from old trees. The yield of seed from spike top and fire scarred trees is only 50% of the yield from normal trees, but the germinating power is 15% higher. If trees are left as seed trees those with full conical shaped crowns, dense foliage, rapid taper and dark deep-furrowed bark are best as they will increase in increment and survive to be cut with a future crop, while it is very doubtful if deformed stunted trees can propagate a forest of high grade material and may not survive to a future cutting.

"Pine was found to seed an area with a radius approximately the total height of the tree. Before a seed tree should be left the marker should make a mental note of the

actual cost in revenue to the people incurred in leaving the tree, and this balanced against the probable effect of leaving it.

"The studies showed that pine reproduces in groups of even aged stands, the size of the groups depending on the size of the openings made.

"Just as good Yellow Pine exists fifty miles north of Kamloops at about the limit of commercial stands as any place within the region. An operation at Chinook Cove, is running four logs to the thousand. A specimen measured 44 inches D.B.H. and 153 feet total height. It was a surprise to find this class of material so far North. However, the best pine is found in the valley bottoms and moist places. The indications are that the northern limit of pine is due to its inability to compete with the more shade-enduring species.

"Our Yellow Pine lands are yielding only 25% of their potential producing capacity. Successive fires have been responsible for the open nature of many of our stands. The trees become fire-scarred and the seeding capacity is weakened. On poor sites a pine only attains a height of six feet in twenty years. If fires occur at intervals of fifteen years all reproduction will be killed. The fertility depends on the water holding capacity of the soil, and when the duff is removed the water retaining power is lessened and the site becomes poorer, and on poorer sites reproduction was found to be less plentiful than on good sites.

"The annual cut has decreased since 1916 from 72 million to 44 million in 1922 for pine, while for all species there has been an increase from 1,280 million to over 2,000 million. We will be faced in the near future with large areas of pine reproduction and very little saw material.

"The economic rotation for average sites is 168 years. There is thirty-five years' supply of pine of all grades at the present rate of consumption, and from ten to fifteen years supply of high grade material. Yet in spite of this apparent shortage operators are using good pine, piled as in a skidway, for railway fills.

"A few days ago I counted 150 logs in one fill. No clear pine should be used for construction where less valuable material is available, and operators should be penalized for its misuse.

"The following should act as a guide in the management of our pineries:-

"Where sufficient young growth exists on an area of sufficient size to resist a ground fire, clear cutting of all mature timber should be practiced.

"Where the advanced reproduction is not of sufficient size to resist a ground fire, seed trees should be left as an assurance of natural reproduction in case of fire.

"Where no reproduction exists seed trees should be left.

"Where the area is a pine-fir mixture, as many of the fir as practical should be removed favoring the more valuable pine.

"Trees to be cut should be blazed below stump height and branded with the F.B. mark.

"Each stand should be managed according to its own particular merits and the growing importance of the future crop should receive due consideration after inspection on the ground by those in the district most capable of taking the various points into consideration.

Mr. MANNING opened the discussion on Mr. Alexander's paper. Yellow pine seemed to hold a unique position in that we were likely to have more difficulty in securing reproduction of that species than of any other. Probably we would have to sacrifice a certain amount of revenue, he thought, in an attempt to secure and foster reproduction. The main point seemed to him to be that, where there were burnings the Douglas Fir reproduction was so much in evidence. That might be due to the nature of the soil. The light character of this soil called for measures to ensure reproduction of Forest growth, consequently we should adopt a system of light marking so as to leave a fair proportion of the original stand. The slash of course could not be left to protect the Yellow Pine, it it was likely to provide a breeding ground for insects.

Mr. PARLOW followed. The insect danger, he thought, was the outstanding feature. The losses from this source fell almost entirely on the merchantable material (they did not thrive on younger age classes apparently) and this fact gave us some hope for the future, as we knew in which areas to look for infestation.

He alluded briefly to the work of Mr. HOPPING, the Dominion Entomologist.

Thousands of acres, he said, had been treated by broadcast burning, with the idea of reducing the cost to the operator as much as possible. Fortunately, much of this has been done on land which will become available for agricultural purposes, so that

the damage to the interests of Forestry has been small. But broadcast burning will eventually have to be abandoned and piling resorted to. Slash burning should follow the operation as closely as possible, and preferably be done in the spring.

The best cutting, he thought, would be a modified selective system. The marking of every tree to be cut in Timber Sales has been suggested, but this would probably involve a 100% cruise, which would be very costly. It would be better therefore to mark the trees which were to be left, and leave it to be assumed that all the others were to be taken.

Mr. Alexander had suggested that in ten or fifteen years the available supply of Yellow Pine would be exhausted. He did not think this was unduly pessimistic; rather the reverse, as he was inclined to think that it would be exhausted in from five to eight years at the present rate of cutting.

Considerable discussion ensued.

Mr. MOORE asked "Did Mr. Alexander's investigations point to the advisability of leaving seed trees in exposed situations?" Mr. Alexander thought, Generally yes. The burning, Mr. MOORE considered should be done under Forest Branch supervision if it was to be properly done, and the operator might be charged a slash-burning fee on Yellow Pine operations.

Mr. MULHOLLAND pointed out that, on some of the 'shows' in his district, broadcast burning would be absolutely ruinous on account of the very thin coating of soil on the bare rock. He recommended the yarding of all slash to a central point or points. The Chief Forester pointed out that on the Coast the slash was heavy, and the cost of yarding it in this way would be excessive.

Mr. R.C.St.CLAIR told the meeting that the real idea behind Mr. Alexander's investigations was to obtain reliable information for the guidance of the Branch in handling future operations. It was intended, he said, to conduct similar investigations as time went on among the other species.

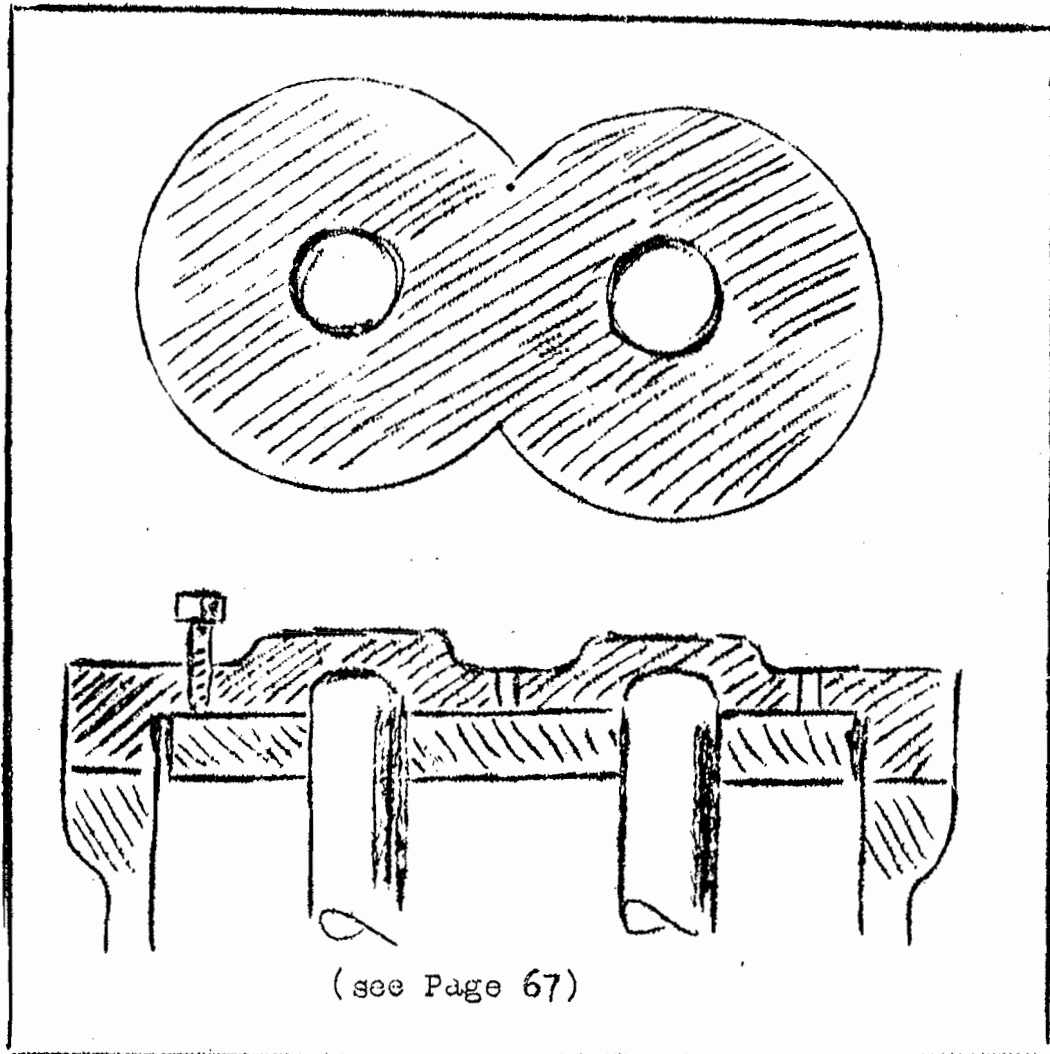
Report of Committee on
"PRACTICAL RESULTS OF INVESTIGATIVE WORK ON WESTERN YELLOW PINE"

(1). That early cost studies be carried out to ascertain costs and practical methods of securing adequate brush disposal in Yellow Pine, and that further investigations be made to ascertain practical methods of encouraging the more valuable pine reproduction as compared with Douglas Fir.

(2). That our data be gathered and compiled in such a form that yield tables may be based on any unit of measurement.

(3). That standardized forms be adopted for gathering data in our sample plots and yield studies.

(4). That royalty on Timber Licences and Stumpage and royalty on Timber Sales be charged on all sound merchantable timber used in camp or logging improvements at discretion of field officer.



FEBRUARY 21st.

Proceedings commenced at 10.10 a.m., when Mr. CAVERHILL called upon A.E. PARLOW (District Forester, Vernon) for his paper on -

POINTS TO BE OBSERVED IN ORGANIZING A FOREST PROTECTION FORCE, including Co-operation with the Public, and Control of Honorary Fire Wardens. What Results are Looked for, and How are they Obtained.

"In addition to the above descriptive heading," said Mr. Parlow, "I had a note from the Forester in charge of OPERATION, saying that he had in mind 'all the various details which go toward the building up of a Forest Protection Force, tracing them step by step, and the methods taken to achieve such steps.'"

"The first step in organizing a Forest Protection Service obviously is to visualise or define the problem. A 'Fire Hazard Map' should be prepared, showing the extent of the area to be covered, its boundaries and physical features, together with means of communication such as Railways, navigable waters, roads and trails, also telephone and telegraph lines, etc. Using this as a base, the locataion of areas of fire hazard can be determined. Records of the locality will show where fires have occurred in the past from land-clearing, logging or other industrial operations, Railways operating, and areas subject to lightning fires. Such a map has been prepared in the Vernon Forest District, on which all fires have been plotted since 1913, the earliest accurate record available, a different colour being used for the fires of each year. An examination of this map shows definite areas where fires occur year after year, e.g. from Railway trains on steep grades or curves, localities subject to lightning storms, or districts where mysterious fires occur, probably set by holders of impoverished pre-emptions where an honest living is difficult or impossible, or by cattle-men under the impression that they are providing larger and better range for their stock.

"The personnel of the service is definitely limited by the amount of money available; therefore knowing the number of men you can use, a study of the Fire Hazard Map will enable you to arrive at the best distribution of them in the field. The organization of this force, its training and equipment, is a field that would cover more than the time allotted for this paper. To quote Major Cowan in the January Number of "ROOT & BRANCH", 'the fact remains that the cost (of maintaining a Forest Protection Organization) has increased much faster than our revenue.' I propose, in this paper, to discuss more particularly the organization of a Protection Force outside the personnel of the Forest Branch, as a way out of this dilemma. The results of this organization should be

- (1) Prevention of Occurrence of Fires,
- (2) Prompt notification of the Forest Branch when Fires do occur, and
- (3) Assistance in Suppression of Fires.

"The fire loss in this country is enormously large in proportion to that of forested countries in Europe. One reason for this is the rapid development of a new country, which necessitates land-clearing and other operations on a large scale; but the principal factor, I think it will be agreed, is the mental attitude of the public generally, which is criminally careless in the handling of fire and indifferent to the huge annual fire loss. The problem, then, is to mould public opinion to prevent the escape of fires, and to assist in every way possible the small force of professional fire-fighters; in short, to bring the public to a realisation that it is their battle we are fighting, their interests we are trying to protect (in actual cash and a thousand other ways), and not merely the interests of timber owners or of that nebulous thing, the Government.

"The paid personnel is necessarily small. Each Ranger in the Vernon District has an area of over two million acres to cover, and it is physically impossible (particularly in mountainous country with deep crooked valleys) for him to be aware of fires which occur in one locality when he may be forty miles away! On the other hand, in ninety-nine times out of a hundred, there is some human agency at or near the fire at its beginning. In towns and cities, the Fire Departments maintain no look-out towers, nor do they send out patrols to detect fires; they depend entirely on prompt and voluntary information from the public, and every City man, woman, or child, on finding a fire, turns instinctively to a telephone or fire-alarm box and sends in an alarm. If the same idea could be developed in the country outside the towns, a great part of our trouble would disappear, for - as someone has said - 'All fires are the same size when they start.' Also, if our existing facilities were used to the fullest extent (e.g., telephone, telegraph, and wireless) to send word of fires, and motors, fast launches and aircraft to convey men and equipment when the fire is discovered, the annual loss of property (personal and State) and the annual expenditure in fire-fighting would both be greatly reduced.

"Regulations provide for co-operation with Railways, inspections and check inspections of locomotives, track patrols, etc., and provision is made also for help by the Provincial Police and Game Wardens, the Royal Canadian Mounted Police, and the field men of the Public Works Department and Water Rights Branch, in reporting and controlling fires; but experience shows that the efficiency of these provisions depends almost entirely upon the personal element. The Forest Officer must know the Railway foreman, the Police Constable, and the field man of the P.W.D. personally, must discuss with him the means available for reporting and handling fires, and be sure that he knows his responsibilities and the action he is to take when he discovers fire. The efficiency of the co-operation he will get in his District depends very much indeed upon how thoroughly he has prepared the ground through personal touch.

"It is however from the general public that the greatest part of the needed assistance must come. Analysis of Fire Reports

in the Vernon District for 1922 shows that 39% of all reported fires were first discovered by Forest officers, 28% by the general public, 17% by Honorary Fire Wardens, 14% by Railway Employees and 2% by the Dominion Forestry Branch, several of whose look-out stations serve Provincial lands. This shows 45%, or nearly half of our fires reported more or less promptly by the public - fires that could not have been discovered until later, and larger, by the Forest officers without this assistance from the public; and it is to the further development of this public spirit that our efforts should be directed.

"The biggest step that has been made in this direction has been the organization of the Honorary Fire Warden system. Responsible citizens in all parts of the district are given appointments by the Government authorising them to report to the Forest Branch any fires that may occur in their locality, and to take immediate steps towards putting the fire out.

"The first essential of the agreement is the immediate reporting, by the quickest means available, of the outbreak of fire. This enables the Forest Officer to be on the fire at once, to see that the fire is being efficiently handled, and to take charge of pay-rolls, grub-bills, etc. The Honorary Fire Warden has no authority to disburse money. The second essential is the authority of the Honorary Fire Warden, substantiated by a neat badge, to turn out men to fight fire, and order what tools, equipment and supplies are necessary.

"The Honorary Fire Warden should serve without any remuneration whatever, except that he is paid as a foreman if he does a foreman's work with a crew on a fire and is reimbursed for any trouble or expense he may be put to in reporting or fighting fires. One exception to this might be the case of an Honorary Fire Warden serving as a local look-out. For instance, there is the case of an employee of the Canada Copper Corporation at Allenby, whose work keeps him on the tipples high up on the mountain and close to a telephone. This man is a useful local look-out and can see a large stretch of country, but being only 'casual labour' and without any particular stake in the country, better service and more interest in his 'look-out' job might be ensured by a small retaining fee of (say) \$10.00 a month. But Logging Superintendents, Foremen of Irrigation Camps, and the like, usually men of a quite different class, have been found willing to serve without pay, and the general principle is that the best co-operation is received from the purely voluntary helper. The retaining fee should be the exception, not the rule.

"Honorary Fire Wardens are chosen from every class of men whose calling takes them out of doors during the dangerous season, and include Camp Foremen of logging operations, road or railroad construction and maintenance, Telephone and Power Company Linemen, ditch-walkers, range riders, stage drivers, pilots of steamboats, ranchers, cattlemen, and others. Good service has also been rendered by country store-keepers in outlying places. The store is a centre for gossip and the spreading of news, and

generally has telephone connection, so that fires reported to the store are phoned in from there.

"The selection of these men cannot be accomplished too rapidly. Care must be exercised, unsatisfactory men dropped, and new appointments made, until the entire district is covered by the system; the ideal being, of course, to have a satisfactory and reliable man in each locality, so that no fire could occur without someone being near the spot to report it at once to the nearest Forest officer, and to immediately take action to control it.

"Recommendations regarding these appointments should be made through the Forest Ranger and discussed with the District office before the appointment is made, then the men are formally notified by the Ranger and presented with a badge as visible token of the authority vested in them. The Honorary Fire Warden should be visited by an officer from the District Office, if possible, after his appointment so as to get into touch with him personally, make sure that he has a proper understanding of his authority and responsibility, and incidentally to help deepen his interest in the service, its objects, and the methods employed to realise them. The local Forest officers should make a point of seeing each Honorary Fire Warden whenever possible, when their work takes them into his locality, and discussing local conditions and hazards, and the action that should be taken under certain conditions. In my opinion, unless this personal relation is established, the fullest co-operation cannot be expected. A review of the work of Honorary Fire Wardens in the Vernon district for the past two years shows that the great majority of the first appointments have proved satisfactory. I give a few notes culled from Final Fire Reports by Rangers -

"Fire No. 107. Through prompt action of Mr. McLean (Hon. Fire Warden) the buildings of the KETTLE VALLEY RAILWAY at Adra were saved. Discovered by E.C. Paynter at 8 p.m. August 2nd. He took three men to fire after sending me word."

"Fire No. 131. Hon. Fire Warden Donald McLean, Superintendent at the Coalmont Collieries, discovered fire at 1.30 August 8th. He immediately sent five men to fight fire, got it under control in twenty minutes. Fire burning on steep side-hill in pine grass, buck brush, jack pine timber, weather conditions dry and windy. All crews laid off same date. Quarter-acre burned."

"Fire No. 145. Hon. Fire Warden discovered grass fire evidently set by cigarette from passing automobile; put three men on and put fire out. Failed to report."

"Fire No. 146. Hon. Fire Warden discovered fire set by careless campers. Put it out with two of his own men. No cost."

"Other cases might be cited, but these are some of the fruits of the Honorary Fire Warden system."

"It has been found, too, that an Honorary Fire Warden carefully chosen and properly instructed, is a live agent of Protection propaganda, and this to my mind is one of our best ways of reaching the public,

"Mr. Alexander put up with his party at the house of a prosperous rancher, an old-timer in the Southern Okanagan, who opened up when he found that they belonged to the Forest Branch and said, 'The Government have honoured me twice; they made me a J.P. several years ago and a year ago appointed me an Honorary Fire Warden.' That is the sort of man and the attitude toward the Service that is desired. On the other hand, another man - (also a J.P., by the way) - asked an Assistant Ranger, after an unjust bill of costs submitted by him had been turned down, 'What is there in this thing for me? I've a living to make, you know!' and added that he didn't see why the Government paid any 'Fire Wardens' at all when they could get 'suckers like him' to do the work for nothing! That man is no longer on our list of Honorary Fire Wardens.

"Some mistakes are unavoidable, but the results generally have been much better than was anticipated. Last July and August, when the thick smoke haze blinded our look-outs, and when men on patrol could not spot a fire until they were right on top of it, it was very comforting to feel that beside our own field force, who were working hard, there were nearly ninety Honorary Fire Wardens in various parts of the District in addition, who could be relied upon to report promptly any fires they saw, and in many cases to take immediate action as well towards controlling them.

"More names will be added to the list this Season, and an effort will be made to visit all the old appointees who have proved satisfactory. There is a likelihood that the novelty of the thing may wear off and our Honorary Fire Wardens grow stale on the job, therefore as close touch as possible should be established and maintained between the Honorary Fire Wardens and our field officers.

"A further means of obtaining co-operation with the public is through the Fire Law Poster, with its space at the foot for inserting the name, address and telephone of the local Forest officer, and the District Office, also Form F.B. No. 292 (the Telephone Card). Authority has been obtained from all Telephone Companies operating long distance lines to place the Telephone Card beside each long distance phone, and further arrangements made whereby all messages turned in by the public to report fire can have charges reversed and paid by the Forest Branch. As much publicity as possible has been given to this arrangement - that the Branch is glad to pay the cost of reporting fires by telephone and that such messages can be sent from any telephone at no cost to the sender. It might be advisable to insert a notice to that effect in local papers at the beginning of the fire season. The best possible co-operation has been obtained from the Telephone Companies. Long Distance Centrals have taken messages, have 'paged' Rangers over large stretches of country when wanted in a hurry, and have been of great assistance generally. The fire situation seems to provide another interest for them in what is probably a monotonous job at times, and this interest is of great service to the Forest Protection force.

"Another development, outside the actual personnel of the Forest Branch, is the organization (pre-organization, it has been called) of auxiliary fighting forces. All the practical fire-bosses, straw-bosses, cooks, etc., in the District should be listed with their addresses and telephone numbers, if any. Supplies of tools belonging to camps, mills, road-crews, etc., also cars, launches, pack outfits where means of transportation are not plentiful, and arrangements made as fully as possible beforehand, so that the use of these men and their equipment may be had on short notice. The Forest officer knows, in this way, just where to turn for fire-bosses, cooks, equipment, etc., at once when the emergency arises.

"The planning of this organization and working out the details will give the Ranger a fuller and more definite grasp of the fire-fighting resources of his district, and by putting the knowledge thus gained in concrete form on paper, the Ranger ensures that if he should 'croak', be transferred, or leave the Service suddenly, his knowledge of the district is not entirely lost to the Branch, and the man who replaces him has a store of information to go on with. Exhibit A shows this organization as it was in the Vernon district in 1922, and is submitted, not in any sense as a model, but simply as an illustration of work that has been done. This organization will be carefully checked over in the field before the coming fire season, any necessary alterations made, and the system made as complete as possible. These organization charts should be in duplicate, and copies should be in the hands of Rangers, Assistant Rangers and Patrolmen, as well as on file at the District Office.

"This canvass for men and equipment affords also a further opportunity for contact with the public and the preaching of 'PROTECTION'. Newspaper propaganda, Fire posters, Demonstration Cars, public addresses and other means all help to educate the public, but not the least potent factor in the campaign of education is the personal touch, and possibly the best points of contact for this missionary work are afforded by the Honorary Fire Wardens, and the pre-organization of his district by the local Forest Officer.

R.V. STUART (Vancouver) opened the discussion on Mr. Parlow's paper. Mr. Parlow, he said, had covered the ground very completely and had left little room for argument. But the problem on the Coast, he thought, was different to that in the Interior. In the last three years, fire causes on the Coast had changed from land-clearing to logging operations, and the latter were now by far the most fruitful source, while fires caused by land-clearing operations had become practically negligible; less, in fact, than half of one per cent.

"Our main problem on the Coast" said Mr. Stuart, "is to secure better organization in the logging camps. It seems remarkable that logging operators, employing men familiar with the woods and carrying a comprehensive equipment of tools, should be the worst offenders, but such is the fact."

The matter of paying Honorary Fire Wardens was a vexed question. They had begun by paying them in the Vancouver Forest District, but last year had tried the experiment of not paying them; and it had been found that generally speaking their services had

not been so valuable. Still, so far as the Vancouver district was concerned, they had definitely abandoned the idea of paying these men.

The educating of the public, he thought, was being neglected, or at any rate was not being given the attention which it warranted.

He had been greatly interested in the Fire Hazard Map of the Vernon district. It had not been found possible, however, in Vancouver to give this the attention necessary to bring it up to date, on account of the large number of operations in their district and their very heavy fire season. However, they hoped to have it brought up to date in the near future. This map, of course, was a very valuable adjunct to the Pre-organization chart.

J.D. BOYD (District Forester, Williams Lake) followed. In his district (Cariboo), he said, a large number of fires, if not actually set, were at least allowed to remain unreported until they had assumed proportions to demand a fire-crew and a pay-roll. Public apathy, he added, was a distinct menace. (It was pointed out here by Mr. COWAN that to fail to report a fire was now an offence). They seemed to be absolutely blind to the risk of personal loss, said Mr. Boyd.

Honorary Fire Wardens, he thought, were as a rule fairly efficient in his district, but in some cases they showed poor judgment in the execution of their duties.

C.S. COWAN explained that, in regard to plotting Fire Hazards, in his own Operation Map he was endeavoring to segregate the causes, particularly natural causes with a view to establishing what might be termed "the Lightning Zones."

"We are told often, especially by people returning from Sweden," said Mr. COWAN, "that in Sweden they have no fires for the reason that everyone is taught and believes that their Forests are their national life. After all, much the same applies here and that same attitude is what we are striving to encourage, partly through the medium of our Honorary Fire Warden system. But even in Sweden, they must have had great difficulty at some time or other in putting the idea across to the people in general. Apparently, however, they have succeeded - and if they can, surely we can! Education of the public will really be the main factor in Forest Protection.

"The personal touch cannot be exaggerated. It is invaluable for several reasons, but particularly that by meeting the public personally, the Forest officer can at least establish that he is on the job."

Mr. Stuart had mentioned that logging operations were now the most fruitful source of trouble in his district, where formerly land-clearing operations gave rise to most of it. That, he thought, was a tribute to what educational work could accomplish. It had been suggested that the field-men might be propagandists. "Last year" said Mr. Cowan, "we sent out 22,800 essays on Forest Protection for use by the school children. These were to be worked in along with the regular scheme of tuition, but the School

Trustees had shown themselves hostile to the idea. Apparently education should begin with the School Trustees!"

"We need more data" said Mr. COWAN, "as to how many fires are actually caused by smokers. It has even been contended that the carelessly-dropped cigarette or cigar butt does not cause fires, but the theory has been exploded. Automobile travellers are being looked after as thoroughly as we know how."

N. MOORE (District Forester Cranbrook) followed. In the Cranbrook district, he said, he had secured definite proof of thirteen fires caused by smokers. A fire which devastated a whole mountain side was positively known to have been caused by a cigar butt thrown down by an automobile traveller. He favored the idea of collecting data for making a strong drive against the careless smoker. Quite ninety per cent of the fires laid to the charge of the Railroad, he said he believed were started by travellers throwing cigar and cigarette butts out of car windows.

Smoking on the rear platform of Observation cars, Mr. COWAN pointed out, had been stopped on the C.N.R. through our efforts, and \$20,000 was being spent by the C.P.R. on preventive measures, such as fixed screens for car windows.

J.D.BOYD said that many of the fires in his district in 1921 had been attributed to campers; last year he had extended the definition to cover campers and travellers. Fires started by smokers, he pointed out, were not confined to those originating from cigar or cigarette butts. Pipe ashes were equally dangerous (citing an instance). A railroad fire which cost some \$300. he said, could only have been caused by a smoker from the evidence obtained at the time.

R.V.STUART, reverting to the question of Honorary Fire Wardens and the extent of their authority, said it would perhaps be a good idea to get out a set of instructions in which their authority would be clearly defined. This, he thought, would help to prevent a good deal of the confusion which arose when it came to paying men hired by Honorary Fire Wardens.

So far as he knew, he said, the field men had no instructions in regard to Classifications of Causes. He thought however, that any fire which originated in the neighborhood of a donkey should be charged to Logging Operations, without looking for further evidence.

The Hon. T.D.PATTULLO at this point remarked that he thought operators this year would have to be extremely careful in this regard. It had been necessary, he pointed out, to make a special levy to meet the cost of last year's fire season. If such another season was to occur this year, he could not quite see where the end would be.

C.S.COWAN added that, of course, the regulations in this regard had been very stringently tightened up by recent legislation.

E.C.MANNING said that in the Northern Districts this year, they had been compelled to work with a very small staff.

in relation to the distances to be travelled in the course of their patrol work. He thought the money allocated to Forest Protection work could be spent to greatest advantage in the hiring of men.

Mr. COWAN explained that the District Foresters' estimates called for more money than could be afforded. "We could not authorise an expenditure in excess of our revenue" he said.

"More money for the hiring of men would have effected a very great improvement in the Prince Rupert district last season" maintained Mr. MANNING. He had been compelled to make use of men who really knew nothing about fire fighting.

Mr. PATTULLO referred briefly to the situation in SWEDEN. The people there, he said, had been taught to regard the Forests as their heritage; they took personal interest in them, and for that reason there were no fire seasons.

Were there any real grounds, he asked, for the impression that fires were deliberately set in many cases? Assent was general.

F.A. MacDONALD (District Forester, Nelson) presented a copy of some instructions which he had prepared which he thought might be issued to Honorary Fire Wardens. We should not encourage these men to be foremen on fires, he said; their function was to organise their districts.

C.S. COWAN said that a booklet was in preparation for general issue, which he thought would cover the ground fairly well.

P.S. BONNEY (District Forester, Prince Rupert) believed in Honorary Fire Wardens, but thought that their authority should be restricted in regard to employing crews, and limited to selected men. Otherwise, he said, a number of fires would be fought at considerable cost to the Department which otherwise would probably be allowed to burn, where no harm could result.

"It is hard to know when to fight a fire, and when not" remarked C.S. COWAN, "and often the fire which, if confined to its own area, would do no harm spreads from that area if not checked." Honorary Fire Wardens must be guided by local conditions and their local knowledge.

A.E. PARLOW (District Forester, Vernon) thought that a laid-down rule giving the Honorary Fire Warden authority to employ a crew of ten men for one day, was wrong. Many Honorary Fire Wardens, he said, could successfully handle crews of many more than ten men, while others again could not handle even ten.

It was explained that this was being taken care of in the Manual which was to be issued.

Report of the Committee on -
ORGANIZATION OF A FOREST PROTECTION FORCE,
Including Co-operation with the Public, &c.

(1) That a monthly bulletin or leaflet be issued by Victoria to all Honorary Fire Wardens to contain live information regarding the current fire season, examples good or bad of work done by Honorary Fire Wardens, and matters of general interest

with the idea of sustaining their interest and making them feel that they are members of a live organization; that copy of Annual Report be forwarded to each Honorary Fire Warden.

(2) That a formal set of instructions be issued this year for the use of Honorary Fire Wardens, setting out their authority and responsibility (details of this to be worked out later), covering the following general principles:

- (a) Purpose of appointment.
- (b) Necessity of reporting every fire to nearest Forest officer promptly.
- (c) Defining authority to employ men in cases of emergency.

&c., &c.

(3) That all operators be circularised, calling their attention to the recent amendments to the Forest Act and their new responsibilities thereunder explained.

(4) That, as a matter of public education, the Branch endeavor to secure the Exhibit Car of the Canadian Forestry Association during the coming season in those parts of the Province not covered last year, and that return visits be made on the recommendation of local District Foresters; and further that Victoria assign a lecturer to accompany the car during the trip, if possible.

(5) That a standard form for recording the "Pre-organization" of each Ranger district be prepared and issued by OPERATION, Victoria. It is suggested that this form include a sketch map on a suitable scale, where available.

(6) That a skeleton or outline of points to be covered in a talk on Protection or Forestry in general be approved by the Victoria office, and made available at once, to be used as a guide by Forest Officers whenever an opportunity presents itself for addressing a public meeting.

C.S. COWAN then called upon N. MOORE (District Forester, Cranbrook) for his paper on

CONTROL OF CREWS

"Israel departed every man to his tent' That was the most dramatic sentence in the story of mankind, said Mr. MOORE. It split a great people. 'We don't want the people of this Province split into those for us and those against us, by insisting on too many regulations.'"

"The experience of the past shows that we can expect fires whenever weather conditions are such that a forest fire can be started, and as the woods get opened up through previous fires, land-clearing and lumbering, these fires will be more intense and

need quicker action and greater expenditure to suppress them before they have time to get beyond human control.

"The greatest factor in the control of a fire is the proper organization of the District, selecting foremen and crews, and preparing equipment and supplies months before the fireseason opens.

"I wish for a moment to touch on the handling of equipment and food supplies, because no matter how efficient the manpower may be men cannot do their best work unless they are properly equipped and fed.

"Cooking utensils should be packed in boxes during the winter months in convenient lots. I have found when cars are being used, that a ten-men outfit is the most convenient, as the box fits nicely in a car, and will permit of tents and the necessary fire-fighting equipment being taken on the same load. This equipment should be standardised so that pots, kettles and other utensils taken from one district to another will be convenient to pack. To this end, a list of equipment should be prepared and furnished to every Ranger, Assistant Ranger and Patrolman and carried in the back of his diary. After every fire the utensils should be washed and packed, so as to be in good shape for immediate use.

"This is true also of fire-fighting equipment. It should be put in good condition during the winter, and kept in good shape all summer, because there is nothing which can have a worse effect on a crew of men than to be asked to work with poor tools.

"Food supplies should be purchased with every care, and must be bought only in sufficient quantities to last during the period which may be required to bring the fire under control. The best plan is to take in sufficient supplies with the first trip to last until a second trip can be made. This gives the foreman in charge a chance to estimate the probable duration of the work. It is necessary to avoid waste, as the very nature of the work - where everything must be done in a rush, food packed in cars, packed on horses or back-packed - very often leaves it in such shape that it cannot be returned. The first order should include supplies which can be quickly prepared; these will be required for lunches on the way in, and also for one or two meals in camp. Every field officer is furnished with a ration-list, which is carried in his diary. This is based on the food required for ten men for one, two, three, four or five days. The list is so arranged that he may select the proper quantities and no necessary item is overlooked.

"One of the reasons for the increased cost of feeding fire fighters is the difficulty in getting cooks. A good cook always prides himself on his ability to feed men well and cheaply, but it is becoming more difficult from year to year to get cooks who will work under the hardships which usually exist in a fire camp. This can be overcome in a measure by paying cooks who understand this work rather more than the prevailing rate of wage.

The small additional cost is more than compensated by the saving in supplies.

"On every fire, initial work should be done under the supervision of a Ranger, Assistant Ranger or Patrolman. They should, if possible, go in advance of the fire crew, select the camp site on some safe place close to the fire, make a reconnaissance of the fire and be in a position to put the crew to work at once at some vital point. The most competent man on the fire crew should be placed in charge. He should be taken over the ground by the Forest officer and instructed as to the best method of attack, taking into consideration the direction of the prevailing winds, valuable stands of timber to be protected, ground slope, slashing or other factors affecting the fire. One of the greatest mistakes which can be made is to attack a fire haphazardly; a little head-work may save a lot of timber, public treasure and wasted effort.

"If a fire cannot be controlled during the first day, work should be resumed at day-break, using about eighty per cent. of the crew. At this time fires are at their lowest ebb; there is very little smoke, flame, heat or sparks to contend with; the air is cool, and even in the worst fire seasons you will have from six to eight hours before the flames are burning strongly. The fire lines constructed in the morning can safely be back-fired. There is very little danger from spot fires. For these reasons, one hour's work in the morning may be more effective than four in the afternoon.

"If the fire is in spruce or moss-laden timber which has a tendency to crown, as much work as possible must be done at night. If there is a bright moon, or sufficient light from the fire, night work can be done to advantage, but under ordinary conditions, the amount of work done per man will be much greater in the morning than at night, and except for back-firing dangerous pieces of fire-line and other special jobs, morning is the best time.

"Lunch should be served to the men on the fire-line every four hours. They should have plenty of drinking water, which can be taken with them in linen water-bottles. Unless the fire can be controlled by a little over-time work, they should not be kept on the fire-line for longer than ten or twelve hours, but should be relieved at three or four o'clock by the men who have been held in reserve, who will take over the fire-line, do whatever new work may be necessary, and patrol the completed fire line until nightfall or the fires die down.

"To obtain best results with a large crew, they should be divided into smaller gangs of from twelve to fifteen men each under a competent foreman. Each crew should be divided into axe men, mattock men, and sawyers, depending on the nature of the work. All instructions should be issued through the foremen, who are held responsible for the work in their sections. If a continuous fire-line is being constructed, each foreman should be given from 100 to 600 yards to construct. When this is finished, he will

take over another piece of line which has been blazed out by the foreman in charge of the fire. In arranging the gangs, short distances should be assigned to each man. This prevents men piling up and getting in each other's way, and gives the foreman a chance to discover the men who are leaning too frequently on their shovels. If the fire line is constructed some distance from the fire, back-firing should be carried on as the fire-line progresses and sufficient men left to patrol the line until it is burnt out.

"If conditions permit, work should be started at the head of the fire and continued in both directions along its flanks. Where work is started in the early morning, it is generally possible to construct the fire line along the extreme edge of the fire. This method has the following advantages -

- (1) There is little danger of losing the fire line, as the fire is robbed of new material and goes out quickly.
- (2) It eliminates all danger of crown fires.
- (3) It saves the timber which would be sacrificed by back-firing, and holds the acreage of the fire to a minimum.

To be effective the fire-line must be carefully constructed. The mineral soil must be cleared for a width of from two to four feet, all snags within 300 feet of the line should be felled, all burning logs and poles rolled away from the fire-line and the fire-line carefully patrolled, special watch being kept for spot fires which may start or may be smouldering outside the fire-line.

"There are a great many fires where this method cannot be used, and where other tactics must be employed. It is especially effective in open types, or where fires have a tendency to crown and are being fought at night.

"No matter what method is used, some fires may get established across the line. If they get away, all work is lost. To prevent this, the patrol should be strengthened during the heat of the day and only the most dependable men chosen for the work. The patrol should be made not only along the fire-line but for a considerable distance back from the line. When the fire-line is completed and back-fired a portion of the crew should be laid off, and only sufficient men retained to patrol the line. These men should put out all fires within 300 yards of the line with water or earth, and should be retained until all fires for that distance from the fire-line are out. On all large fires, one man should patrol the line for four or five days after all danger seems past, because no matter what care has been taken, there is always the chance of small fires smouldering for days.

"On every fire where more than twenty men are employed, there should be a time-keeper. The average foreman on a fire is disposed to be most liberal with the pencil! The time-keeper should look after the supplies, keep track of the equipment and time for each man, and arrange for transportation to remove them

when the work is completed.

"Possibly the greatest factors in increasing the cost of fires are -

- (1) Lack of preparation (no tools or supplies ready, no arrangements for obtaining men).
- (2) Attempting to control a fire with too small a crew.
- (3) Starting work on a fire without first making a careful examination to ascertain the best method of attack.
- (4) Loss of fire-line through neglecting to back-fire, or back-firing at wrong time.
- (5) Fire escaping through reducing the patrol too early.
- (6) Loss of equipment through neglect, waste of food supplies through poor methods of purchase and careless handling.
- (7) Careless time-keeping - men are paid for time which they do not work.

These mistakes can all be overcome by proper organization months before any fires occur.

"Victor Hugo said that Waterloo was won by a captain of the second class who had unshakable faith in his men. Waterloo proved, too, that Wellington's men had unbounded faith in him! That is the spirit which will triumph in every walk in life. If fire-fighters are well-treated, given good food, the best living conditions possible, properly handled by men who know their work, they will generally respond by giving their best efforts. Those who do not give their best should be weeded out, as the tendency will be to drag the good men down to the level of the poor ones.

"A list should be kept of all men who understand and will do their work. They should be used whenever new fires occur. By this means it would be possible to build up a fire-fighting organization which would make few mistakes and would need less supervision."

Discussion on Mr. MOORE's paper was opened by P.S. BONNEY. The season of 1922 was a glaring instance, he said, of public indifference and apathy to the question of Forest Protection. That was a matter which only education could remedy.

On the question of equipment, he believed it was the custom in the U.S. Forest Service to provide fire-fighting tools and equipment for eighty men for every \$1,000 available for patrol purposes. Some similar arrangement, he thought, would be a good thing for us to adopt, especially in those districts where the sources of supply were few. He did not think the average district made adequate provision in advance of their needs.

Rush crews, he said, were hard to get in the Northern districts, and a selective system was impossible. The personnel were often inefficient, unskilled in the use of ordinary fire-fighting tools, and quite worthless for sustained effort.

"Where the foreign element predominated, he had found the use of 'Identity chits' very effective. They prevented the confusion which was bound to arise when dealing with Central European peoples, whose nomenclature was peculiar, and avoided the risk of dual identity.

He had tried the 'Cafeteria' system in feeding large crews on jobs of several days' duration, where otherwise tables would have had to be constructed. That is to say, the food was served by the cook to the men as they filed past the dish-up table. He found it to work very well.

The supervision of crews was quite a problem, he admitted. He thought it would increase efficiency if we had more working straw-bosses. Often the supervising force - foremen, straw-bosses, time-keepers, etc., - amounted to twenty per cent. of the crew.

Discipline on the fire-line was hard to maintain among the class of labor found in the Northern districts; they were not accustomed to it and did not take kindly to it.

E.B. PROWD followed. The supply of equipment, he said, was often (as Mr. Bonney had stated) inadequate at the commencement of the season, but he found that generally they were able to acquire enough for their needs as the need arose.

The time statement was very useful, he said, in eliminating after-disputes as to the amount due; the man having signed the time statement had thereby accepted the amount shown as being due.

He thought that in respect of the public attitude, matters were improving and co-operation was becoming more spontaneous. Constant reiteration was the only system.

Occasionally, like Mr. Bonney, he found it necessary to employ men ill-suited to fire-fighting, but in those cases it was often found possible to give them work which they could do.

The supervision of the crews, in the final analysis, depended on the field officer. In some cases, however, they were apt to place too much confidence in their pre-organization, and left the supervision to their foremen with disastrous results.

Discipline, too, resolved itself into constant supervision by the officer, who should take prompt and effective action by dismissal in early stages of the trouble.

The question of food supplies, of course, was important. Crews would not work well unless well fed.

In regard to expenditures, the mistake (he thought) was often in the field man's underestimating his requirements, both of men and material, with the result that the operation was dragged on for longer than would have been the case had he gone to the job adequately prepared. But after all, pre-organization was only half the battle; having made the plans, it was equally important to be energetic in carrying them out.

T.H. WILKINSON endorsed the remarks of the previous speakers, but was inclined to attach considerable importance to the pre-organization scheme. A well-thought-out plan of operation, he said, was of the greatest value - he himself had found it so.

E.C. MANNING reiterated that his greatest trouble had been the inexperience of the men he had had to employ.

C.S.COWAN at this juncture remarked that a considerable amount of literature on the technique of fire-fighting had been issued, and instructions given through the medium of the Reading Course. Were we profiting from this, he asked?

Mr. MCORE said "Decidedly", and Mr. PARLOW said that he had found the Western Fire-fighters' Manual of great value. A number of these had been issued to men who had since left the service, but who had retained the Manual. He did not resent this, but thought rather that it showed that the men who retained the Manual did so because he appreciated it and was interested enough in it to keep it by him.

R.V.STUART agreed in the main with the previous speakers. He thought that a larger reserve stock of hose should be held; there was the risk of a serious situation last year, he pointed out, from stocks becoming depleted.

It was impossible for the Ranger or Assistant Ranger always to supervise the work in its initial stages, when they might have several fires on their hands simultaneously, (Mr. MOORE at this point stated that he had himself supervised the initial work on as many as seven fires in one day) but Mr. STUART maintained that this could not be expected in every case.

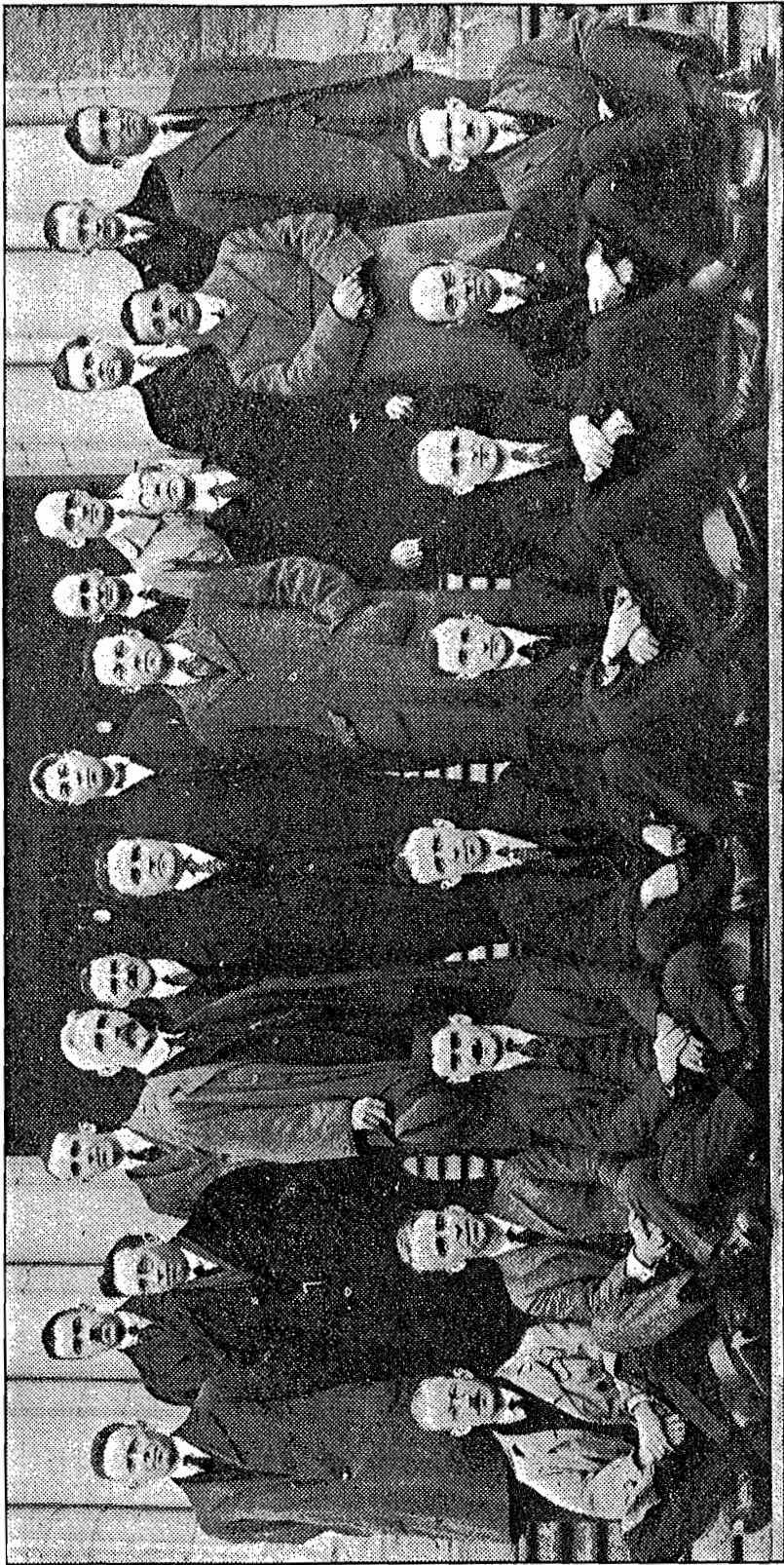
The selective system of picking men for fire-fighting could not be too strongly emphasised, he thought. In two Ranger districts on the Coast this had been brought to such a pitch that they had now what practically amounted to an organization of resident fire-fighters, who knew the work and what it involved, and were skilled and prompt in attending to it.

F.A.MacDONALD said that as one result of the fire season in Nelson, he had prepared working instructions for Foreman, a copy of which was before the meeting. A man charged with the supervision of a large number of fires could not give definite and specific instructions in every case, but there were certain clearly defined things that must and must not be done in any case, and these were embodied in his instructions.

Report of Committee on CONTROL OF FIRE CREWS.

(1) That, inasmuch as the Western Fire-fighter's Manual has been found a most valuable assistance to our field staff, it is recommended that the Department prepare a similar manual giving the portions of the Forest Act affecting fire prevention and control, and based on B.C. conditions and experience, and that this manual be supplied to Honorary Fire Wardens and to Patrolmen employed by Lumber Companies and other private timber holders, in addition to the regular Forest Branch field staff. It is also suggested that this manual be prepared in standard loose-leaf form.

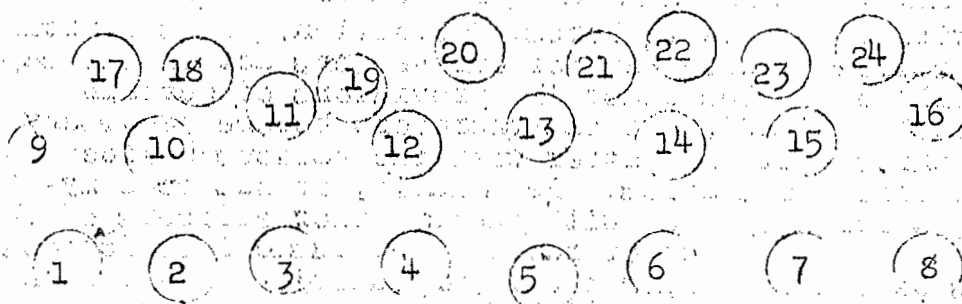
(2) As it is frequently difficult to obtain food supplies as might be outlined in a standard food list, your committee recommends the present practice of purchasing substitutes in cases of emergency, providing reasonable explanations are given for the purchase of any items which are apparently unusual.



(3) In view of the fact that every year a considerable number of Assistant Rangers and Patrolmen are new appointees, and lack expert knowledge of fire-fighting methods, etc., it is recommended that all Assistant Rangers be appointed early enough in the season to be given a period of training in fire fighting methods and Forest Branch procedure at suitable camps, before taking over their respective districts.

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Key Plan of Group of those attending
District Foresters' Conference at
VICTORIA, Feb. 19-23rd., 1923.



1 J. L. Alexander.	9 J. M. Gibson.	17 L. R. Andrews.
2 R. V. Stuart.	10 R. C. St. Clair.	18 T. H. Wilkinson.
3 C. S. Cowan.	11 G. R. Naden.	19 J. H. Blake.
4 S. W. Barclay.	12 Hon. T. D. Pattullo.	20 N. Moore.
5 W. H. Currie.	13 P. Z. Caverhill.	21 F. A. MacDonald.
6 F. D. Mulholland.	14 W. H. Stokes.	22 G. P. Melrose.
7 T. A. Simmons.	15 A. F. Parlow.	23 E. B. Prowl.
8 J. D. Boyd.	16 P. S. Bonney.	24 C. D. Orchard.

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FEBRUARY 22nd.

Proceedings commenced at 10.05 a.m., when Mr. St. CLAIR called upon E.B. PROUD (District Forester, KAMLCOPS) for his paper on

SUCCESS IN POLICE CO-OPERATION AND HOW IT CAN BE EXTENDED.

"The Provincial Police are entrusted with the maintenance of law and order throughout the Province outside of organized municipalities, and since their force of constables are stationed here and there in the same territory as our Ranger forces administer, it is reasonable to expect that a well-developed spirit of co-operation should exist between the two organizations, even though the Ranger's duty in law enforcement is limited to the field covered by the FOREST ACT. It is the purpose of this paper to briefly outline the measure of success attained in developing Police Co-operation and discuss means whereby such co-operation may be strengthened and extended.

"It has been found from experience that the police organization has a tendency, unless otherwise persuaded, to leave wholly to the field officers of the Forest Branch all matters pertaining to the enforcement of the provisions of the FOREST ACT, particularly with reference to Forest Protection. This attitude is doubtless assumed because many of our Rangers act in the capacity of special Constables under the provisions of certain sections of the FOREST ACT. It has therefore become necessary thoroughly to thresh out the matter with the various Police Inspectors and Chief Constables. Personally, it has been my custom to have a friendly chat with the superior officers of the police force, with the object of having them issue instructions to the various constables under their jurisdiction to act with our field officers as a supplemental force in the work rather than as an independent authority. My reasons for this I shall outline later.

"The success in securing police co-operation is measured by two factors :

- (1) The willingness of Inspectors and Chief Constables to extend the helping hand, and
- (2) The type of constable.

The second factor is by far the more important for it is rarely impossible to secure from the superior police officers at least some measure of assistance. On the other hand, a willing constable with a fair amount of good judgment, initiative and tact is, I am forced to admit, not always to be had. Possibly the multiplicity of the constable's duties has something to do with his unwillingness or tendency to side-step matters pertaining to our activities. However, I can safely say there have been several cases in my experience when we secured excellent results from individual constables who gave whole-hearted co-operation.

"The objection to having police constables act as independent authorities is in the type of man usually met with. By this, I mean that we are often confronted with a man who lacks knowledge of the details of fire control, and to give him a free hand would involve us in endless difficulties insofar as expenditures are concerned. This brings us to the purposes for which we endeavor to utilise the services of the police.

"In the first place, it is very desirable to have the local constable enlisted as an ally in the prevention of fire. To do this he must be conversant with the regulations and statutes governing the use of fire during the close season. He can also be authorized to perform the duties of an Honorary Fire Warden, providing he is of the desirable type. Coaching along these lines must be done by the District office staff and Rangers in a tactful manner. We have found this to work out satisfactorily in most cases, and by personal contact it can be decided whether or not it is safe to enroll the constable as an Honorary Fire Warden.

"Secondly, and of greater importance, is the question of effective co-operation in working up evidence necessary for prosecution in the case of fire trespass. We have found it a general rule that police constables are rather diffident about assuming the role of detective for the purpose of securing evidence. The common attitude is that we should place in the constable's hands a cut-and-dried sure-fire case, swear out an information, and thus arm him with the blue paper, when he will take up the burden of the case and see it through more or less willingly. There have been instances, I am glad to say, where the constable buckled in and assisted in the work of rounding out the case for successful prosecution.

"My opinion is that the police force should take the facts of any case of fire trespass we hand over to them, and by virtue of the responsibilities of their position proceed to work up the case, on the understanding that we assist them to the uttermost. The average Ranger or Assistant Ranger in a busy fire season has enough load to carry in connection with fires without the added work of ferreting out evidence so necessary in all but the most flagrant violations of the fire law. Of course, we can on our part remedy this condition by developing a man whose responsibility will mainly be that of a law enforcement officer. I believe this plan is followed out in the Vancouver district.

"There are other phases of our work where we sometimes desire the co-operation of the police force; for instance in the case of theft of Forest Branch property. As an illustration, I might cite a case in the Kamloops district. During the winter of 1921-2, heavy snow storms broke down a cabin in which we had stored fire-fighting equipment. The cabin in question is located well back from any settlement; only trappers and hunters had any occasion to visit it. In the spring several tools, the cabin windows, and some cooking utensils were missing. A trapper was suspected. Police co-operation was requested, a copy of the

request being mailed to the Superintendent of Provincial Police as well as to the local Chief Constable. The local constable was instructed to investigate and after several months and follow up from us through his Chief, came back with a reply throwing the blame for no result on the Assistant Ranger whom we had instructed to assist him in the tracing of the missing articles. The police constable never made the trip necessary to look into the matter. In other words, the whole matter was side-stepped.

"In the above, the subject under discussion has been given more or less general treatment. I would now like briefly to give the results of our experience in the Kamloops district during the 1922 Season.

"There are only three constables with whom we had any direct dealings during the past year. There are, I believe, two more who touch parts of the Kamloops district, i.e. the Big Bend of the Columbia, and the Swift Creek area in the Cariboo district. The other three cover territory as follows - Seymour Valley, Adams Lake region, and the North Thompson area. Fortunately, we had no occasion to call upon the Seymour Valley man for assistance in Protection work. The Adams Lake constable assisted in preparing papers for one case of prosecution, but was not present at the hearing of the case. His headquarters are at Chase in the Dominion Railway belt, and he rarely visits Provincial territory, so that chances for effective field co-operation are remote.

"The North Thompson man gave good co-operation insofar as fire detection and control, as well as the actual conducting of cases, were concerned, but lacked either the ability or the aggressiveness and tact necessary to tie down alleged incendiary fires, of which there were several in his territory. The active support of the police was requested through the local Inspector and Chief Constable in an effort to meet the epidemic of incendiarism which we believe developed in the Lower Thompson Valley last year as a result of the range-burning propaganda so pronounced in the Dominion Railway Belt.

"The constable was directed to investigate two cases of alleged incendiarism, but reported in each case that he could not find sufficient evidence to warrant an arrest. However, in my opinion the investigation was delayed unduly so that his chances of securing evidence were diminished. Independently, we endeavoured to get to the bottom of things but with barren result, so it would be unjust to say that he failed entirely in his duty.

"In conclusion I would say that real benefit can be and is being secured from Police Co-operation, even where we fail in some cases to reach the ideal, and it behoves each one of us to foster the spirit and extend it as much as possible by personal contact with the various members of the Police organization. Reciprocal action on our part, such as serving of summons and providing transportation for police officers within reason and without special trips, will go a long way towards building up a closer working arrangement between the two Departments. Person-

-ally I do not think we should meddle with police duties beyond certain limits defined by the judgment of the individual Forest officer as indicated above.

"There is only one point more, and that is the difficulty of inducing witnesses to travel any distance involving extra expense and loss of time with the very conservative witness fees and expense allowances allowed by the Attorney General's Department under the Summary Conviction Act. The scale of fees is, I understand, the same as that applying in the case of the Federal Department of Justice and is more applicable to Eastern Canada. If some arrangement could be arrived at to make up the loss to the witness there would be a greater chance of securing voluntary witnesses, and consequently a higher average of successful cases, with added incentive to police officers to carry on."

The difficulty of securing attendance of witnesses, said Mr. Prowd in conclusion, was a serious hindrance to our work of enforcement. The witness fees were quite inadequate to compensate a man for the loss of a day's work.

F.A. MacDONALD opened the discussion of Mr. Prowd's paper. They had a very good type of constable in the Nelson district, he said, and had no trouble in securing co-operation - even to the extent of assisting us in the collection of outstanding accounts. In rounding up fire-crews the Police had been very helpful, notably at KASLO, where the Provincial police constable had worked tirelessly in the Branch's interests during the fire season.

He found them very willing to assist in the collecting of evidence.

The personal equation was important in securing the best co-operation. Very cordial feelings existed, he said, between the Forest Branch and the Chief Constable in his district.

R.V. STUART agreed with Mr. Prowd that success in securing police co-operation depended greatly on the willingness of the higher officials to assist, and the type of constable. They had had somewhat disappointing results in the Vancouver district, in regard to aid in law enforcement; and the Branch themselves had done quite ninety per cent. of the work of securing convictions in most cases. Also, the average constable lacked a knowledge of legal procedure which was apt to be disconcerting, and several cases had been lost through evidence wrongly prepared by the police. The general attitude, however, was good. Some of them were of great assistance in securing crews.

We should make a point of commending the police for individual good work, he thought. They appreciated it, and it was a great help towards promotion, of course, to have good reports on their work.

Some constables had really good ideas, and would make fine propagandists if the idea of Forest Protection could be sold to them.

Mr. St. CLAIR, in inviting general discussion, said that a

good deal depended on our own as well as on the police personnel. Some of the latter appeared to be peculiarly adapted to assist us in our work, and some of our own personnel were better than others at securing Police co-operation.

P. S. BONNEY said that in Prince George they had no trouble in securing co-operation on paper, but when it came to actual practice the results were not so apparent. He thought that more effort should be directed towards fostering Police co-operation.

J. D. BOYD said that, in his district, the police were of great assistance. He had tried the system of commending them for individual good work and it had been successful in establishing a friendly feeling. Generally speaking, they were very helpful. Witness fees were quite inadequate, he agreed, and this was one of the great stumbling-blocks.

Mr. G. R. NADEN was called upon, and stated that he had little to say beyond to welcome them. He was sorry he had not been able to spend more time at the Conference. It was a good thing, he thought, that we should meet in this way once a year for the sake of the personal touch and the interchange of ideas. Nothing but good could result - to the Branch, the Department, the Government, and the Province.

N. MOORE pointed out that in some districts incendiary fires were common. He would suggest that we avail ourselves of an offer made by the C.P.R. to allow us to use their Secret Service organization. In one district they had had eight fires, he said, and watched closely only to find that they had been devoting their attention to the wrong man. He thought in cases of that kind we might profitably avail ourselves of the C.P.R.'s offer. The Railway Co. did not propose to make any charge, he added.

C. S. COWAN said that, in his opinion, however disappointing the extent of Police Co-operation may have been, at the same time they had co-operated to some extent, and that in itself was a notable improvement over two years ago when there was absolutely no co-operation. It must be remembered, he said, that the police had their own line of work to attend to, and too often we were inclined to stand aloof where we could assist them. Of course, we must ourselves co-operate if we expect co-operation.

In regard to commendation, seventy-eight laudatory letters had been sent out last season, he said - which (he added) meant that seventy-eight people not on our payroll had worked in our interests to that extent - but was there not a danger of our over-doing this system, until it might seem to the Superintendent that these commendatory letters were purely formal and of little real value? In cases where special mention seemed warranted, he thought District Foresters might themselves write personal notes, which would relieve the impression that this was mere routine. "We must not overdo it, or we destroy its value" he said.

In regard to witness fees, the Attorney-General's Department had been approached in this matter, but were not

inclined to take action. The jury was in similar case, they said, but a man impanelled on the jury was obliged to serve for considerable periods often and suffered the greater hardship; they felt they could not do anything in the case of witness fees without opening up a rather broad question. In certain cases, however, he thought we might ourselves make the witness an allowance where he was put to any extraordinary expense in attending.

The Secret Service organizations, he thought, were in bad odour, and the system had several objections. He had thought, however, of arranging with the Police some sort of a zone system. Special police detectives, on the regular police pay-roll and therefore free from the stigma which attached to the stool-pigeon, would be employed in each zone to make a special study of forest protection work and the preparation of evidence. This would cost us nothing, he said, unless occasional travelling expenses when the man was required to go beyond his regular beat. These special officers, having been trained in forest protection work, would be able to employ their investigative skill in obtaining evidence and in preparing it for the Court.

The ordinary police constable should not be regarded as a detective; and we should assist them more than we have done, by giving them cases in such shape that they will not have to do all the work of handling them.

F.A. MacDONALD said - "Both last year and this year, I have thought during the meetings that the trend of argument about the police as individuals does not indicate that the letters of appreciation which are sent to the police at the end of the season are genuine. It certainly would not be flattering to them, if they could listen in at this meeting! It appears to me that we have a tendency to underestimate the value of these men. Surely men of the general type of constable, men who devote their entire time to enforcement, must as a class be at least equal to the average Forest officer in law enforcement? And especially where Forest officers specialise in so many subjects, while the police occupy themselves in just that one line of endeavour. In spite of myself" he said, "I am forced to the belief that we are under-estimating the value of the police and overestimating ourselves! It is just possible that where co-operation is not of the highest, it is because there is in making the arrangement with the police some evidence or reflection of the suspicion that we do not really value their services very highly.

"It is possible that the Nelson police are of a better type" he added, "and if that is so, I am in so much better a position than some of the other Foresters."

P.Z. CAVERHILL suggested that we were depending too much on the police to do something which apparently we were unable to do ourselves.

The method of approach, he said, was most important if we were to secure their good-will and co-operation.

It had been suggested by an interested party (not in any way connected with the Branch) that we might hold some sort of a post-mortem on fires, with a view to ascertaining the cause. We might select certain fires, where the causes were not apparent, to be examined in that way.

R.V. STUART referred to a fire which had occurred at Powell Lake. On the lake, he said, there were a large number of launches being operated. This particular fire was supposed to have been caused by a careless smoker, and the local Police officer made a point of questioning all launch-owners. He did not secure the offender, but the Forest officer did. However, the point was that the Police officer certainly made every effort.

The whole secret of success, he agreed, lay in establishing a friendly feeling on the part of the individual. This we must do by the personal touch; instructions to the constable from his headquarters would not get as good results.

C.S. COWAN asked for the views of the meeting in regard to the Detective Zone system. How did they think it would work?

R.C. St. CLAIR thought it would be a very good thing, these special officers, having been trained in forest protection work, would be able to train some of our men in investigation work.

E.B. PROWD thought the idea good.

J.M. GIBSON agreed. These officers, he thought, would be very valuable in securing evidence. The Forest officer was well known in his district, he said, and often evidence was withheld from him which a stranger might readily obtain.

J.D. BOYD thought they would be very useful in his district, in keeping track of the movements of certain nomadic stockmen, whose operations were fraught with danger to the range. Having no stake in the country, they were careless with fire.

R.C. St. CLAIR passed on to the campaign which had been conducted among the school children in the Squamish district, and called upon T.H. WILKINSON, who was responsible for the scheme, to speak upon it.

T.H. WILKINSON said that he had always considered this a most important field of endeavour in the spreading of Forest Protection propaganda and principles. Get at the children, he said, and through them we shall get at the parents. "No parent with any real sense of parental responsibility and pride but is keenly interested in his children and what they are being taught; and all parents appreciate having their children taken notice of and encouraged." He had no difficulty, he said, in securing the co-operation of the School Trustees and teachers. He visited the schools and gave talks on the subject. He did this in the Spring so as to give it time to mature before the fire season started.

Essays, he thought, gave the children the best opportunity to show their grasp of the subject, and as an incentive he offered small prizes. The awarding of the prizes had had to be postponed until after the Season, but this has proved to be a good thing as it kept the interest alive.

In only one instance did the teacher know anything about Forest Protection; the others were quite keen but had no idea of it. This was really a thing which should be handled by Forest Branch men. The children liked to feel that they were being talked to by someone who really knew what he was talking

about. The teachers themselves cannot put it over so well, because they are not themselves 'sold' on it, said Mr. Wilkinson. "We know about it, and have it at heart, and we are the best able to 'sell' the idea to the children."

He had thought of taking the boys out into the woods and giving them a talk on elementary forestry, but would have to leave that to his successor in the district.

P. Z. CAVERHILL was greatly in favor of the idea. The coming generation was our hope for Forest Protection, and Mr. Wilkinson was entirely right when he said that it was our affair rather than the teachers', as the teachers could not put it across anything like so well as we could. The Educational authorities might be approached with a view to having some scheme worked out throughout the Province.

C. S. COWAN pointed out that we had already for some time past been doing our best to secure their co-operation. "The field men ask us what we are doing in this direction" he said, "but the point is what are they doing?"

C. B. PETERSON thought that certainly it was time to come to some definite arrangement with the Educational authorities to see what could be done towards including this propaganda in the routine school-work.

"It might even be taken up with the Normal Schools" said P. Z. CAVERHILL, "with a view to educating teachers in training."

L. R. ANDREWS spoke of the Forestry Association car which visited the coast two years ago, and of the great interest which it created. "But even then" he said, "we were unable to get the School Trustees to agree to the school children's visiting the car during school hours. They were distinctly hostile to any interference with their scheme of work on the ground that the students were overloaded already with the variety of their subjects." But in the outlying districts, co-operation was readily given. The car was a finething; the Ranger could take the children down to it and give them a talk. Where the car could not go, a scheme like Wilkinson's might well be adopted. In the bigger centres, the Normal School idea might be very successful.

A. E. PARLOW pointed out that Nature study formed a part of the regular school routine. In his district, the teachers were unable to fill in the period, and he had induced them to talk to the children on Forest Protection in the Nature study period.

N. MOORE thought that if the car could be brought around again the results would be very valuable. He recalled the success which attended its last visit.

G. R. NADEN said he had been intensely interested in Mr. Wilkinson's talk. It had been suggested that he might approach the Department of Education, and he was quite willing to do so, but he thought Wilkinson's idea much the better one. A man actually engaged in Forestry was the proper man to talk to the children, and

especially the boys, as children were not satisfied unless they had confidence in their instructor. True, the Rangers had not a great deal of time, but still an hour once in a while would make a tremendous difference in the course of a year.

The Minister had referred to the attitude of the people of SWEDEN. That had been accomplished only by its being incessantly drilled into the people. If the children of this Province could be taught that their bread and butter depended to a great extent on the forests, a tremendous change in public sentiment would by and by result.

J.H.BLAKE thought that the Canadian Forestry Association might be induced to take up the scheme of a nation-wide contest. (Mr. Bonney stated, as a matter of interest, that the prize in a former nation-wide contest of that sort had been won by the Prince George district).

C.B.PETERSON at this point introduced Mr.A.V.HAMILTON of the Purchasing Agent's Department, who explained to the District Foresters the system now in effect in regard to Requisitions for purchases, and sundry other matters relating to his Department.

Time did not permit of the reading of F.A.MacDONALD's paper on 'MECHANICAL AIDS, &c.' which was reserved for the next day's meeting.

Report of Committee on

SUCCESS IN POLICE CO-OPERATION AND HOW IT CAN BE EXTENDED.

(1) Whereas the Police organization can be used to great advantage in furthering the work of Forest Protection, be it therefore resolved that the fullest possible co-operation be secured by concentrated efforts on the part of all Forest Branch officers, mainly through the channel of personal contact.

(2) Your committee wishes to heartily endorse the proposed plan of detailing special investigation officers of the police force to the work of detection of fire trespass cases, it being understood that forest officers will give all possible assistance.

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FEBRUARY 23rd.

The Proceedings commenced at 10.05 a.m. when Mr. R.C. st. CLAIR called upon F.A. MacDONALD for his paper on

"MECHANICAL AIDS, &c."

"As all of you are familiar with the several Mechanical Aids to Forest Protection," said Mr. MacDONALD, "I shall not enter into any description of the several forms of equipment, but shall attempt to confine myself to a general discussion as outlined in the title of this paper - Mechanical Equipment, its best use and possible extension. No particular district or section of the Province will be kept in mind, and only such phases of the subject as may be of general interest and broad application will be discussed.

"In the letter notifying me to prepare a paper on this subject, several items are listed, thus - Look-outs, Pumps, Cars, Launches, and Telephones. Farther down the letter a little 'soft soap' is added.

"Look-outs may be roughly divided into two classes - Fixed Look-outs and movable look-outs.

"Fixed look-outs include, first, prepared elevated sites equipped with range finders, telescopes and maps carefully oriented, and some means of rapid communication with the patrol staff; and second, each and every dwelling throughout the forest area. These latter are rarely provided with apparatus for locating fires and often have no telephone communication.

"Movable look-outs include aeroplanes, launches, motor cars, speeders; in fact, every form of patrol from the foot patrolman to the aviator.

"Fixed look-outs, on specially chosen sites, have been operated for some years in parts of the Province. These were located in sections where extensive areas were under observation, where the character of the adjacent country is favourable to intensive scrutiny, and where facilities for reaching fires were of the best. Under conditions, therefore, which were almost ideal for the operation of these look-outs, it was found that the best results were attained during that part of the season when the hazard was least, and when the patrol staff was able to cope with the outbreaks. As the hazard, and the number of fires increased, and as the patrol staff became occupied with fire-fighting and consequently were able to patrol less, the look-outs began to lose in efficiency in a like degree. When the hazard is greatest, and the staff fully occupied, the look-out becomes inoperative on account of decreased visibility.

"A careful survey of the Southern Interior of B.C. indicates that it would require fifty look-out stations, each with a long and expensive telephone line, to comprehend that country. The patrol staff in connection could hardly be

reduced, so the establishment of such a system would mean an increase in the temporary staff of 66 per cent., and an expenditure of at least \$50,000 with an annual upkeep of (say) \$10,000. The greatest efficiency would be attained in a year of low hazard, and in a normal year the whole system would be ineffective during a large part of the season. The principle, however, is good and after all, the look-out system of detection falls down not from any fault in itself but from the fact that the patrol staff is not able to handle the outbreaks with sufficient success to ensure a clear atmosphere. This may or may not be entirely blameable upon our own staff. The forests of British Columbia form only a part of the extensive forest belt west of the Rockies and extending to Alaska and Mexico. If this whole area could be brought under the surveillance of a fire-proof organization, the look-out would be a valuable part of the organization. But when the smoke from the South drifts in to the extent of cutting down the visibility to five miles or less, it certainly reduces the value of look-outs, if it does not render them impracticable.

"The other fixed look-out - the dwelling house - is often admirably located to overlook a considerable tract of country. I believe that much good could be accomplished by enlisting the co-operation of the people at large in reporting fires. A small proportion of the public are ready and willing at all times to assist, and will go out of their way to do so, but the large body of them are uninterested. Facilities for reporting are not of the best, but a special effort should be made to interview as many as possible and elaborate the look-out system in this way. The expensive equipment of a city fire hall would be useless without the co-operation of those who turn in the alarms.

"Our staff is more, or less, efficient as the outbreaks of fire are promptly reported or not. The apathy of the public in this respect is no doubt largely responsible for the trend of policy in the Forest Branch to perfect an organization which will function through its own comprehensiveness. This has been carried to the point where there is now a wide-spread impression that fire-fighting is a prerogative of the Forest Branch staff and that it is the business of nobody else, even on private lands.

"I believe there are great possibilities in the extension of this look-out system by persistent educational propaganda, having as an objective that condition of public opinion, where every man, woman and child understands that the forests of the country supply their bread and butter, and that a forest fire constitutes a public calamity which benefits no one.

"The aeroplane is undoubtedly the premier moveable look-out. Vast stretches of country may be intensively scrutinised, and with wireless telephone communication with land stations, a highly efficient detection system may be operated. But as opposed to the many good points of an aeroplane patrol, there are high cost, short life, high cost of operation, and the need for numerous suitable landing places. These factors alone make the

aeroplane patrol impractical. It is estimated that the minimum number of aeroplanes required to establish an effective air patrol of Central and Southern B.C. would be twelve, in operation for ninety days at four hours each per day. This would run into a sum of money close to half-a-million dollars for operation without considering purchase price or replacements, and would amount to practically our whole Forest Protection revenue. This would put the aeroplane out of consideration for general use, and using the same line of argument it would seem that even the operation of one in the most hazardous district would be a questionable expenditure.

"The motor car, I consider, ranks next to the aeroplane in importance as a moveable look-out, as with an extensive road system, a large area of country is under frequent observation, the look-out carries its own fire-fighting tools, in many cases directly to the fire, and affords rapid transportation of men and supplies.

"In contrast with the aeroplane, the first cost of the motor car is moderate, length of service is long, cost of operation is low, and upkeep inexpensive.

"The launch ranks below the motor-car in importance only because of its inability to approach the actual scene of the fire. At the same time, the motor car would be valueless in the vicinity of Bute Inlet, and a launch on the Cariboo Road!

"In making a trip down the West Coast of Vancouver Island some years ago, the Captain was talking about new lighthouses which were being built at the time, and he remarked 'that would be satisfactory only when they had one every mile!' I feel the same way about cars and launches for Forest Protection. I believe the ideal patrol would be a motor car for each and every hundred miles of road, and a launch for every fifty miles of lake or channel.

"The other means of transport have their good points but they are necessarily limited in their scope and apply usually only in special cases where the use of Launches or Cars is not feasible.

"Telephones are so closely associated with look-outs that I shall deal with them next.

"The ordinary wire line telephone seems to have reached its prime in development, and you are all conversant with the cost of installing, cost of upkeep, and the uses to which land lines may be put. The further extension of the telephone system is mostly a matter of cost as balanced against the probable improvement in the organization brought about by the installation

"The wireless telephone, however, is only in its initial stages of development, and the possibilities of immediate

improvements of inestimable value are of particular interest to the Forester. When such a recent discovery has, in such a short time, reached such a point in its development that every boy who can rustle some copper wire and a piece of galena may listen to the elaborate programmes being broadcasted almost continuously; when a receiving set may be carried in a coat-pocket or shopping bag and utilised for entertainment during the tedium of waiting hours; it would appear to me that we are at the opening of an era when isolated districts will be in uninterrupted touch with the current news of the days happenings, when the phonograph will be outdone as a vehicle for the dissemination of popular and classical music, and when every forest patrolman will carry on his person, without inconvenience, the equipment necessary to keep in touch with his headquarters and with the other members of the Forest Protection staff.

"Even now, it is possible to establish intercommunication between widely-scattered points at a cost less than with equivalent land lines.

"I do not believe that the moment is at hand when wireless telephones can be generally adopted, but indications all point to great possibilities in the immediate future. It appears to me that there will be more opportunity for useful and economical extension of this type of mechanical equipment than any other. The necessity for rapid communication between the several persons on the staff is urgent and, on the whole, my opinion is that we have not improved or extended our facilities for such communication during recent years, excepting for the experiments with wireless telephones on the Coast.

"I gather from reports covering the operation of these telephones that the value to the service is very great, and that only the cost involved limits the extension of the system in its present stage of development.

"There has always been some question of the efficiency of wireless in a mountainous district, and it has occurred to me that an opportunity now exists, with broadcasting stations operating every evening, to carry on some tests with a portable receiving set, which would demonstrate this point at a minimum outlay for equipment. The feasibility of the later installation of a complete system would be definitely settled and where conditions were favourable the installation could await suitable economic conditions.

"The pumps as now supplied to the staff are very efficient machines, so long as they are handled carefully. They have, however, certain inherent constitutional defects which may be corrected and a more useful machine produced. What is needed is a machine as nearly fool-proof as possible.

"The pump itself is open to improvement in at least two ways.

"You are all aware that a few ounces of sand going through a pump gear will reduce its efficiency rapidly, and until the gears and case are machined in a lathe this defect grows. I have prepared a sketch showing a method of counteracting any damage of this kind. This alteration allows adjustments to be made in the field and the efficiency almost restored. Slight changes in the pump casing and cover are required, but the weight is not appreciably increased. You will see by an examination of the sketch that a plate is fitted in the pump cover and is adjusted to reduce the clearance by turning down the set-screws. It is possible that cardboard liners at the back of this plate might be substituted for the set screws, and give good results. This cover may be fitted to the existing pumps.

"The other change would necessitate an entirely different type of pump - a two-stage centrifugal. These pumps are designed for high pressures and would not be affected by sand in an equal degree with the gear pumps. The weight of the unit would be increased perhaps 10 lbs. over the present weight.

"In the engine, the crank bearing seems to be productive of more grief than any other part. This is undoubtedly due to inattention on the part of the operator to the lubrication. It would appear to me that this condition will be hard to deal with because the operator may or may not give sufficient attention to it. When the damage is done, no disciplinary measures will repair the machine. I believe that the mechanical department should determine the quality of oil required for effective lubrication, and equip the pump with a mechanical oiler that would supply the proper amount. It should not be difficult to get operators who would keep one of these filled. It might be that a sight attachment could be put on the crank case so that the approximate height of the oil could be readily seen. You will all have noted that the two-cycle pump, where the proper amount of oil is mixed in the gasoline, does not give this trouble. This would indicate the necessity for a hard-and-fast rule on equipment for supplying oil, and nothing left to the guess work or experimental notions of the operator.

"The use of the pump for fire-fighting can be widened by the application to motor cars and launch engines of some type of pump which may be brought quickly into action whenever occasion demands. There appears to be a mechanical difficulty in the way of adapting the present type of pump to the power plants now in every-day use. It is worthy of note that the ordinary launch or car engines are easy to operate and are ready to function well over ninety per cent. of the time during the fire season.

"In preparing this paper I have found the various mechanical aids so closely co-related, that I have found it impossible to deal with one of them without bringing in the others.

"After having given three of my best years to the problem of the type of launch best suited to Forestry work, I feel that I have about exhausted my ideas in that direction. I was very fortunate in being connected with the inception of the programme for providing the staff with a more serviceable launch of standard design. Much was accomplished during 1918 and afterward with the result that the ranger now travels in a craft of which he may be justly proud, and in which he can live and work in comfort. The man on patrol in one of the latest additions to the fleet can travel with confidence in the dependability of his craft in practically all conditions of weather. The pioneer fire warden took his life in his hands every time he started out!

"The Assistant Ranger of today travels in a craft which commands respect for himself and his work wherever he stops. The fire warden of the earlier days was treated as the appearance of himself and his boat suggested - nobody! I recall my first year of service with the Forest Branch. I was provided with an 18-ft open boat to cover a district embracing Seymour Narrows, Euclataw Rapids, Hole-in-the-Wall, Okisholls, Lower Johnston Straits, and other placid waters. This ship was named the 'Georgia', presumably from her supposed suitability for navigating the Gulf of Georgia. A large pleasure yacht, the 'Dolaura', steamed into my district during the fire and fishing season, and the party went fishing. Deeming it my duty to warn them to "Be Careful with Fire", I ran alongside and asked for the Captain. A uniformed gentleman, who was waiting at the ladder, asked my business. I told him, and he said "I presume your job is no bigger than your boat. The Captain is busy!"

"Of course, only gentlemen of that type would express themselves so clearly on this point. The general public would be content to form their own opinion and reserve it for guidance in their subsequent action on the Forestry practice requested.

"I do not think it necessary to elaborate on this point any further. It will appear to all of you that it is necessary for our men to keep themselves and their equipment in such shape as to command the respect of the public. An untidy launch or car is, to many people, an indication that our business is run that way.

"But, apart from public opinion, the character of our own work requires that the boats shall be of such a type (varying with the location) as is capable and safe for carrying on Forestry business, particularly fire suppression, whenever occasion calls for that work to be done, and in spite of storm or inclement weather. Every replacement of any boat now in service should be preceded with a careful study of conditions and only serviceable boats of one of the approved types should be considered.

"I have in mind several launches which are in use which should be replaced by boats of the patrol type recently constructed in Vancouver. If we are going to have boats at all, surely we should have boats that will give the maximum of service. The difference in cost of supplying and operating a boat between a good boat and a poor one would be easily consumed in one fire that

could have been reached in time by a seaworthy boat.

"However, so much has been accomplished in this direction in recent years, that it may be hoped that no need for a change of programme will arise, and we may look forward confidently to that time in the near future when every boat in the service will be suited to its particular work and locality, and when it will no longer be necessary to discuss or consider the advisability of making an urgent trip on account of the risk involved.

"The improvement in transportation inaugurated by the adoption of motor cars cannot be estimated, and no one would have the temerity to suggest that the extra patrol thus made possible is not economical.

"The statement is current that fires are becoming more frequent as the facilities of the Forest Branch for combatting them are extended. This assertion is perhaps based on fact, but the authors forget that these same facilities are available to those who are careless with fire. As the fire bug widens his field of operations, so must the Forest Branch adapt itself to the changed conditions and prepare to meet them.

"On paper the patrol staff with motor cars may seem to be as large as is required, but during August 1921 I travelled from Osoyoos through the Okanagan to Kamloops, and thence to Williams Lake, returning by way of Kamloops, Merritt and Princeton to Keremeos, and in that whole trip saw the first Forest Branch car between Keremeos and Penticton.

"As mentioned before, I believe the patrol will not be too intensive until there is a motor-car for every hundred miles of highway.

"There is one thing in connection with the operation of motor cars which does not properly come within the scope of this paper but which I wish to mention. It is a well-known mechanical fact that any machine which operates at a speed or load approaching its maximum will not stand up to the work for long.

"I know of one motor car which has operated for two years with practically no repair or overhaul charges, and through a difficult country with second or third-class roads. The ranger who operates this car keeps in closer touch with his district than most others and he has a bad fire district. He has never been known to go over 12 miles an hour, but his 'bug' is ready at all times and he gets there! He may be a few minutes behind the 25 miles per hour fellow some times, but many times - and this counts in the fire season - he would be days ahead of the 45-mile speeder. I believe the cars would be more efficient if there could be some attachment to prevent fast travelling, with its consequent rapid depreciation.

"There is another form of mechanical assistance which has not been given as much consideration in fire-fighting as I believe

its possibilities warrant. I mean High Explosives.

"I have had in mind for some time the idea that it would be possible to produce a rope-like container for one of the high explosives, wound on a spool that could be safely handled, could be rapidly laid along a desired location for a fire guard, and exploded instantly through its length from either end. There frequently arise opportunities where such a workman could be used to great advantage. It is true that unless time could be taken to cover the explosive only a small part of the latent force could be utilised, but as time is the essence of all fire-fighting, the advantage of being able to construct a line quickly would be of immense advantage. The line probably would need improving here and there, but the explosion should make a good fire-guard.

"There is now on the market a product for detonating large numbers of dynamite charges together, and which consists of a lead tube about quarter-inch in diameter, filled with TNT. This comes in spools of about 500 feet and weighing about 75 lbs. each. It is claimed that this is so safe to handle that the transportation companies carry it without restrictions except that no detonators shall be carried near it. When stretched on the ground and sticks of dynamite laid beside it, the whole lot is exploded by a cap at one end of the TNT tube, or Cordeau fuse as it is called.

"If this fuse has sufficient kick to explode dynamite cartridges placed beside it, it should kick up some dirt by itself. I have the interest of the local Powder people enlisted to the point where experiments under field conditions will be undertaken as soon as weather conditions are favourable. The results of these experiments will be duly reported. It is possible that the present type in use is not strong enough, but there seems to be no difficulty in the way of increasing the size until a suitable size is found which will do the work required of it and still be portable. Apart from some suitable form of explosive for constructing a fire line, I believe that every foreman should have access to a supply of dynamite for ordinary blasting of large roots in the course of the fire line, large windfalls, and similar obstructions.

"This will about complete the list of the major mechanical aids to fire-fighting; but among the other aids should be mentioned the portable tank pump supplied last season for the first time. There must occur many instances where these would be of great assistance. In this connection I may state that, so far as I know, there were no fires in Nelson district last season which started near a highway where one of these pumps could be used; and right here I wish to go on record as believing that the numerous road signs are in a large measure to be given credit for the fact that no fires occurred along the main roads.

"Our old friend and ally, the mattock, comes in for more abuse than any other part of the service except the Assistant

Ranger, the Ranger, the District Forester, the Forest Branch and the Government. Although I have no definite suggestions to offer, there should be somewhere in the country someone with ingenuity enough to design a tool as useful as the mattock and which at the same time could be used without the waste of so much energy.

"Another mechanical aid which is useful and not plentiful enough in any tool kit I have seen, is the portable carborundum grinder. A dull axe should not be tolerated on any fire-fighting job.

"I have now run briefly over the subject assigned to me, and if I have said anything which will lead to any improvement in the service, or which will set another to thinking along lines which will develop any innovation of merit, or improvement of existing equipment, I shall be only too pleased to give what aid I can in its adoption."

J.H. BLAKE opened the discussion on Mr. MacDONALD's paper. He could not speak with authority, he said, on the Look-out system as he had not given it any special study, but he had formed the impression from his casual observations that, when these look-out stations were most needed they were generally rendered partly inoperative by poor visibility. Still, undoubtedly they were of some use.

Residents who did not have telephones, he thought, might be assisted towards getting them, and where there is good telephonic communication, local interest might be aroused by an educational campaign, or even by making the telephone users Hon. Fire Wardens.

Very soon, he said, the radio will be developed to the point where it can be of great assistance, as its domestic use becomes more general. Speeders, and even cars, might be equipped with portable telephone sets which would enable the Ranger to cut in on the Railroad telephone system, or other lines.

In regard to automobiles, the first cost was moderate, but most people would agree with him that their active life was much too short and the cost of maintenance much too high. "What we want is more work per Dollar, not more miles per Dollar!"

One piece of extra equipment which he would like to see made standard was a combined trouble and spot-light. This would be very useful.

The aerial patrol is of great value, of course. Planes are being developed now which can stay very much longer in the air and carry much greater loads, and (by reason of their increased flying radius) do not require to land so often, so that fewer suitable landing places are necessary. Of course, here too, poor visibility, such as generally accompanied the forest fire, was a great hindrance. The full development of the aerial patrol, however, depended on cheaper machines and longer-lived mechanism.

With regard to Pumps, he would like to say that were the pumps given the same care and attention as a launch or car engine, they would give the same good service. The Pump must be kept free from sand and grit, which if left to accumulate on them would sure-

work into and injure the bearings. He favoured a larger number of pumps; with more pumps we could employ the relay system oftener.

Launches were now practically all standardised on the Coast, but a standard launch for the Interior had yet to be evolved. This would have to be a shallow-draft vessel, staunch and sea-worthy, with a good turn of speed for reasonable horsepower and with good carrying capacity. The point of draft seems to be the principal objection to the use of Forest Guard type of launches on our interior Lakes; but there were two other objections, namely - if built on the Coast there would be the cost of transportation added to the cost of the launch, and if built in the Interior, the lack of competent boat-builders for this class of work.

Speeders, he thought, would give better results if the operators would pay closer attention to the working instructions.

J.M.GIBSON followed. Mr.MacDonald and Mr.Blake had both covered the subject very thoroughly, and left him little to add.

The look-out system was hindered to a great extent by poor visibility, but often there was enough wind to keep down or disperse the smoke so that the look-out could function; this was especially the case with lightning fires, which were often accompanied by a light rain which left visibility conditions quite good.

He had found, too, that look-out stations were often of great value in reporting on the control of fires. From his lofty station, the look-out man could see the points where the fire was getting away better often than the men on the spot.

In regard to launches, neither of the former speakers had referred to EVINRUDES. He believed in them.

Mr.MacDonald, he thought, was justified in his attitude towards cars, especially in view of the greatly increased number of motor tourists. A more intensive patrol was necessary.

Telephone communication in some parts of the Interior he said, was practically nil. The radio would help, certainly, when its use could be extended.

The use of High Explosives was a subject well worthy of investigation. The grub-hoe men were nearly always left behind by the axe and saw men, in the construction of the fire line, and if by the use of high explosives the ground cover could be broken up sufficiently it would certainly help considerably.

C.S.COWAN said that last year the look-outs had been tied up pretty badly, and the idea spread around that they were of little use. He pointed out, however, that the main function of the look-out was to report incipient fires before the smoke from them had assumed such proportions that visibility was lessened.

With regard to the radio, it must not be forgotten that the majority of users used only the receiving set. The sending set was very much more costly. It might be possible to equip look-out stations of course, and to carry an operating current up to the station in preference to using a gasoline engine

to generate current, with the attendant labor of packing up gas and oil.

He then took up the question of Road Signs. There had been friction with the Public Works Department, he said, from the fact that very often little discretion had been used by our men in placing these signs. The sign which read STOP, DANGER AHEAD! for instance, should only have been placed at points where a real danger actually did exist. Instead of that, they had often been placed without any regard to that phase, with the result that much of their value was lost and actual ridicule or hostility created.

The portable telephone idea, he thought, would have to be used with extreme caution. It would never do to casually cut in on the Railroad system as to do so would interfere seriously with their work of train despatching. For that reason there was no use in taking it up officially with the Railroads who in some cases had flatly refused to consider it, as they must have a clear line at all times for train despatching. It might be arranged locally, of course, with the Train Master for the division. But Telephone Companies would have no objection so long as the tolls were paid.

R.V. STUART considered the standardization of equipment was one of the most important points to be taken up. They felt very strongly on this in the Vancouver district, he said, and were keen to have it done. He outlined what had been done in that district already in the way of standardising their launches. It was more trouble, he said, to maintain two launches of different types and differently equipped than it was to maintain a class of five or eight standard launches.

He would like to see this placed on a basis where we could get out for our field men standard lists covering all items of equipment, right down (he said) to dishes. The Purchasing Agent strongly favoured the idea and agreed that it would greatly lessen and simplify his work, Mr. Stuart added.

They had felt the need for a standard Lake boat in the Vancouver district, too.

The portable pump, he thought, was one of the main mechanical improvements introduced in 1922. For fighting fires at high elevations, where water was scarce, and for cleaning up spot fires, it was invaluable.

L.R. ANDREWS said he would like to hear a discussion on the most valuable type of speeder. This gave rise to considerable discussion and some divergence of opinion.

C.S. COWAN thought that the type of speeder must be governed by local Railroad conditions.

P.S. BONNEY said they used the standard "36" Sheffield in his late district mostly. There they had a large number of privately-owned speeders which could be borrowed in times of abnormal pressure. The "36" could be operated by one man, and was not too heavy for one man to lift off the track. Spare parts were easier to obtain for the Sheffield than for some of the other types - the Buda, for instance. Personally, he favored the "36" Sheffield.

The amount of traffic over the railroad, said C.S.COWAN, had a great deal to do with this. Where there were lots of trains, naturally the matter was of less importance. The light speeder would be the correct type in that case, as the trains could take care of the transportation problem.

L.R.ANDREWS favoured the "40" Sheffield. This, he said, was capable of carrying a good load itself and would at the same time haul a trailer. What he was looking for was a standard type speeder which would not only be useful for patrol work but for hauling men and materials when necessary.

F.A.MacDONALD said they had two speeders in his district a "36" Sheffield and a "41". The latter would take from eight to ten men and a pump, and was not too unwieldy to be lifted off the track when necessary.

T.H.WILKINSON said that the "40" Sheffield was not such a cumbersome vehicle as some people seemed to think; the idea seemed to be current that the "40" was in the same class as the Shay locomotive. As a matter of fact, one man could handle it and turn it around on the track. The "40", he said, had the power of them all, the Casey, the Mudge, the Roadboss, and the "40" Sheffield, the latter was found to be the best. The Roadboss had fallen down on them at times on important occasions, but the Sheffield was always dependable. He thought it the most serviceable car not only for patrol work but for getting the crew on to the fire in the minimum time.

He endorsed the portable pump.

J.H.BLAKE favoured the Sheffield "40" for the P.G.E. patrol. It had plenty of reserve power and, what was more important, it had a free engine. With the fixed engine it was necessary to push the speeder to start the engine, and this was not always possible with a load. The others were 2-cycle whereas the Sheffield "40" was 4-cycle. The 2-cycle engine was not really satisfactory as it was apt to lose its compression through the crank-case, and so did not always deliver its rated power unless very carefully looked after. In other districts, where there was a good train service and no severe grades, the light speeder was found more satisfactory.

C.S.COWAN pointed out what he said was an inconsistency in Vancouver's attitude towards the Roadboss. At one time, he said, they were much in favor of the Roadboss and had urged its adoption as standard. There was also the fact that the Roadboss had figured in a couple of accidents, which had not added to its life or efficiency.

R.V.STUART said that was so, but the Roadboss had not continued to justify their good opinion of it. It was important he said that on the P.G.E. they had speeders which would make them independent of train service, as this was a hazardous area.

P.Z.CAVERHILL was quite in accord with that idea. We must have independent means of communication, but we must not forget the cost. Requisitions for the coming season for equipment would eat up \$350,000 and leave only about \$150,000 for

actual fire-fighting, if the amounts asked for were supplied.

P.S.DONNEY said conditions on the P.G.E. were peculiar to that system. In his late district a "36" Sheffield suited them best, as the Railroad did a lot of patrol work themselves, crews were easily got, and they could always borrow speeders. Local conditions, he thought, were the governing factor.

"We all realize the need for economy", said R.V.STUART. "That is one of the main pleas for standardization."

C.S.COWAN said that diversified conditions must, of course, be met in diversified ways, to which R.C.St.CLAIR added that we must begin by classifying conditions and making standard equipment lists for each class of conditions. That disposed of the speeders, he said - what about the other points?

N.MOORE thought that batteaux with engines would be a solution of the difficulty in finding a standard lake launch. This was accepted with reservations.

J.H.BLAKE, adverting to the Evinrude, said the ELTO Light Twin had proved very successful, and both would have to be thoroughly investigated before they decided to standardize on one or the other.

L.R.ANDREWS could not see a great deal of difference between the EVINRUDE and the ELTO in point of reliability; one was about as good as the other.

C.S.COWAN instanced the new Evinrude inboard engine. This, he thought, would be a good thing where we had a small boat in permanent use.

In regard to the cost of car operation, R.V.STUART suggested a monthly bulletin showing the cost of operation for each individual car, and Mr.BLAKE mentioned that he had such a scheme in hand at the moment.

J.D.BOYD thought that rangers might be given instruction in regard to car maintenance and minor repairs; they should not be encouraged, he said, to take their cars into the garage at every provocation.

P.Z.CAVERHILL asked if we could not get some data as to the time saved by our means of mechanical transport in getting crews to fires. We had been subjected to some criticism, he said, on account of the number of our cars, and the saving in time which they effected was our main argument in support.

Report of Committee on "MECHANICAL AIDS,&c."

(1) That all Forest Branch cars and speeders be fitted with portable telephone sets in districts where telephone lines exist (except in well-settled areas) and local arrangements be made with owners or interested parties to make use of these lines at any point when required.

(2) That closer supervision be exercised by District Office officials over the operation of our present equipment both in the care of the machinery and discretion in its use. Maintenance and operating costs at present are a heavy drain on the resources of the Branch, and it is felt that much can be achieved, both in the planning of field work, to avoid duplication of trips, and in the Forest officer's care and knowledge of his equipment, resulting in greater efficiency at less cost.

(3) (a) That standardisation of smaller equipment, such as cooking utensils, shovels, mattocks, etc., should be adopted to the extent that standard items be used.

(b) That buying in quantities will considerably reduce first cost and these can be bought and distributed before the fire season commences.

(c) That standard sets of fire-fighting equipment be got out and adopted (in five-man, ten-man, etc., units).

(4) That experiments in wireless communication with look-out stations in the interior be considered and data gathered to determine cost and value of such communication.

It was duly moved and seconded, and passed unanimously at the closing session of the District Foresters' Conference,

That we, the District Foresters, in appreciation of the work done by Messrs Currie and Stokes in connection with the publication of 'ROOT AND BRANCH', present these gentlemen with a hearty vote of thanks and at the same time pledge ourselves to support their work more concretely in the future than we have done heretofore.

TO OUR READERS.

Our readers will notice that this is exclusively a CONFERENCE Number, and for that reason a number of interesting contributions from the field have been held over. These will form the nucleus of our next issue, and the Editor wishes to thank the contributors very heartily for their support, and for the kindly sentiments which they express towards this publication. This attitude is decidedly encouraging, and our ambitions for 'ROOT AND BRANCH' seem now to be within measurable distance of attainment. We have 'hitched our waggon to a star; ! LET'S GO !!