will provide the major requirements of life but winter or off season work must be the source of a cash income. This can be obtained very often from the surrounding forest lands as soon as these forests are up to production standards. In the worst areas there will be a thirty to forty year period required for establishing and improving the forest before it is self sustaining and in better regions a revenue is possible at once. In Ontario there are at least three sections where a combination of agriculture and forestry is necessary, central old Ontario, Sudbury-Sault Ste. Marie, and the northern Clay Belt.

There might be included those regions where continued deforestation has affected certain contiguous high quality agricultural land by encroachment, flood, or excessive erosion, as for example along the Lake Ontario interlobate moraine which parallels the lake shore ten or fifteen miles back.

With the gigantic tasks of war still ahead of us, planning now for peace may seem irrelevant. Nevertheless, in order that the complexities of re-establishment may be intelligently and efficiently met, a great deal of preliminary work will be necessary if, when the time comes, proper plans are to be ready for co-ordinating all the detailed requirements of the various projects. The forestry profession has here a great opportunity.

BY J. O. WILSON,

Woods Manager, Anglo-Canadian Paper Co., Ltd.

It is very important to grasp the full significance of the Rehabilitation Project—to cover the national transition from a full war footing to a full peace footing. To date there are some 400,000 men in our fighting forces and 700,000 in our armament factories. All these men must go back to normal occupation at the close of the war and their rehabilitation will involve not only every industry and national resource of the Dominion of Canada, but every walk of life in our social structure under peace time conditions.

We are here concerned with our forests as one of the most important of our Natural Resources and the forest industries, tourist traffic and recreational activities associated with their use. Any plans we may visualize and formulate must be related to this setting and made to harmonize with other plans.

1. Starting then, with our Forests: Where are they in relation to the centres of population and what do they consist of? This naturally brings us to a consideration of forest surveys. Our Dominion statistics are based on very broad and imperfect surveys. Provincial surveys are probably more detailed, but still very imperfect and, finally, our Industrial surveys, though more detailed still, in some respects, are, many of them, out of date and even incomplete and sketchy.

To place these on a sound basis offers considerable opportunities in our post-war rehabilitation plans, and to keep them constantly revised and up to date will offer permanent and gainful employment for an essential set of organizations and field forces.

Our forests and forest industries have never been placed on a sound basis, and the fundamental lack of adequate survey information must first be corrected before we can proceed to plan sound reorganization.

2. As our surveys are placed on a sound basis, we can classify our forests and start to lay out our long-term plans. Then we can proceed to place them under proper management, as follows:

- (a) Large areas will be managed as game reserves;
- (b) Other areas will be set aside as recreational areas, where the prime objectives will be to provide hunting, fishing and rest areas;
- (c) Other areas, again, will be managed as protective forests, where catchment areas for power and water supplies will be the main objectives, or where erosion is the chief concern.
- (d) Finally, there will be those areas which will supply our forest industries with the raw material essential to their existence.

The first problem will be to open up these areas and make them accessible for management purposes. A complete road and trail system is the first essential. This will call for careful planning and will provide permanent work for a considerable body of men. But we should start on these plans immediately and start to train the organization necessary to take care of and train the large forces of forest labour which will be gainfully employed on these projects. The final object is the profitable use of these forest areas. We tend to think chiefly in terms of the mature wood, but we must not neglect other values.

Some idea of the organization and personnel involved may be obtained in connection with the following statistics in connection with the C.C.C. in the United States: From the start of the Corps in April, 1933, to the beginning of 1939, 2,120,000 young men and war veterans were given employment, education and vocational training in the C.C.C. Camps. The following organization was used: 20,000 reserve officers administered the Camps, 50,000 foresters and other technical experts supervised the programs, 5,000 college graduates conducted Camp Education Programs. 100,000 skilled and unskilled personnel were involved. This gives us some idea, at least, of the size of the organization we must visualize.

During the same period four and three-quarter million man-days were spent fire fighting and four million man-days in fire prevention and suppression. Sixty-one thousand miles of fire breaks were built and one-half billion trees were planted.

3. We can pass on now to consider Forest Conservation. Do we always fully realize what this means? The forest is a live asset, and, under proper management, we can not only perpetuate it, but we can improve it.

Natural reproduction is the fundamental basis of all our forest management and through that we seek sustained yield of not only our forest products, but of all those other forest values mentioned above.

Where natural regeneration fails, we must resort to artificial regeneration through seeding or planting. Then we must tend the growing crop to maturity, finally removing the mature forest product to serve as raw material for our mills and to serve the needs of the communities.

This will call for a class of labour and a form of forest organization which is practically non-existent in Canada. But planning and training must start now if we are to be prepared for the large number of men we can gainfully

employ on this work. The pioneering stage in our older settlements is already long since over, and the reconstruction and conservation work depicted above is long overdue. Such work is no temporary palliative and should not be regarded as a tide-over and hand-out to our returned soldiers. It is permanent work which will bring valuable returns to posterity.

When we consider what we have to offer in the way of work and working conditions in our forests at the present time, we realize we must provide something more attractive than present conditions—more permanent employment, better remuneration and greatly improved living conditions are indicated.

We are now in a position to consider what we must do:

- (a) We need to train forest workers to carry out the forest management plans;
- (b) We need to train forest operators to harvest the crop;
- (c) We need to train personnel to organize and plan our forest management;
- (r) We need to train research workers to solve the problems associated with the forest in all aspects involved in the proper management of this mighty natural resource.

It is our sacred duty, as Forest Engineers, knowing the needs of the forests and the communities dependent upon them, and knowing the importance of this resource to the welfare of this Dominion, to provide for our Statesmen and our Financiers the necessary vision for, assuredly, without this vision we will surely perish.

4. When we examine existing facilities, we begin to realize the tremendous task which faces us and the urgent need of immediately putting all our existing facilities to work planning and organizing the start of rehabilitation work in our forests:

- (a) We have four forest schools training foresters to do the surveying and planning. Are these adequate for the task? These men are primarily trained in forest conservation, but have very little knowledge of forest utilization. The courses should be extended;
- (b) We have no logging schools where men can specialize for logging operations and prepare themselves for administrative posts in our large industrial forests and forest industries;
- (c) We lack specialists to take care of our growing needs in connection with forest protection involving not only fire, but insects and fungus diseases.

The forest industries bring in an annual dollar equivalent of three hundred and fifty million dollars per annum, yet we appear to know very little about the economic possibilities of this Industry. We have no specially trained forest economists in Canada, and we have no facilities for training them.

All this will cost money. We always shirk the issue, but I see no valid reason for fear. Surely we must have the necessary courage to drag this issue out in the open—to face it squarely. Let us pause then to look at it for a moment. We all know that a substantial proportion of our industrial forest holdings are crying out for immediate attention. We probably do not know what the exact proportion is, but we certainly should know. Let us suppose that it is at least 10 per cent. Taking the figures for the Province of

Quebec, we have 75,000 square miles of forest under license and another 25,000 square miles in various kinds of private ownership—a total of 100,000 square miles of forest. Ten per cent of this is 10,000 square miles or six million acres. Many of these acres have already lain idle for years and the rest will do so unless we do something definite about it. I would suggest a twenty year plan, arranged in such a way that we could organize ourselves to take care of 300,000 acres per year. Such a scheme would probably cost us three million dollars per annum.

Present revenues would provide all of this. This would involve a change in the present financial programs, but it is time we found some means of financing colonization and agriculture other than out of the revenues from our forest resources.

When we come to look at the situation in relation to wood utilization, the picture is very much the same. Our knowledge is so scanty and industrial leaders seem to be content with present answers. New discoveries are numerous and going begging for application.

Forest labour undoubtedly offers large scope for improvement. This aspect of our social structure is crying out for proper organization.

Work in the forest, whether it be on the silvicultural side or the utilization side, calls for skilled workmen, yet we have no training facilities. We have been trying to solve this problem for years, but we find ourselves in a vicious circle, with efficiency, living conditions and earning power as the three main elements. We have tried to raise the efficiency, we have tried to improve living conditions, but we have always kept earning power so low that there is no inducement for a man to stick to forest operations for a living and make himself proficient at the tasks involved. We should break out of this vicious circle by raising the earning power. Efficiency and better living conditions will follow naturally.

We have one Ranger School in the whole of Canada, yet we need trained men in every aspect of forest management—rangers, scalers, foremen, superintendents and men trained in cutting and hauling. No one would dream of trying to run any other industry of like magnitude without special training facilities. Yet we proceed to provide and market our forest resources without providing even the most elementary rudiments of training for processes which call for a high degree of skill and organization.

We should provide many more Ranger Schools immediately to train the men who will be needed to train the numerous forest workers we can gainfully employ now. At the same time, we will be preparing the necessary organization to handle our returned soldiers and displaced war workers when peace once more returns and thousands seek permanent and gainful employment. What better opportunity can we offer?

We should set all existing forest organizations to work at once examining this rehabilitation problem and planning to provide permanent places in our forests and forest industries. No one man can do this work and no one plan will suffice.

Listing some of the organizations available, we have:

1. The Dominion Forest Service;
2. Our Provincial Forest Services;

3. Industrial Organizations, such as the Woodlands Section of the Canadian Pulp and Paper Association, the Quebec Forest Industries Association and all the Forest Protective Associations;
4. The Canadian Forestry Association and the Quebec Forestry Association;
5. The Staffs of our Forest Schools and Ranger Schools;
6. The Staffs of our Universities, where specialized training for Research Workers can be provided.

All these bodies should be set to work at once. It will take time to plan and training should start now. Then we will be ready, in some measure at least, for the sudden call, which peace will surely bring, to find gainful permanent employment for some of the many men who have been directed into war work and the army during the present crisis. We must offer something better than we have been able to offer to date. We must avoid blood, sweat and tears.

We should be studying the situation now so that we can decide what must be done. Then we can proceed to make ready the necessary organization to start this work immediately the present world crisis changes from the field of battle to reconstruction at home.

By J. MILES GIBSON,

Professor, New Brunswick Forest School.

This subject has been thoroughly discussed and I would like to express my appreciation of what the speakers before me have said in connection with this problem. It is a very real problem. It is possibly one of the biggest our country will have to face. When we talk about what we are going to do with the men when they come back from the army and with the men now attached to industries, many of which have started up as a direct result of the war, we have a real problem. Let us consider what is going to be the point of view of these men who are going to come back. They represent every cross-section of life in the Dominion. They are in this war as soldiers fighting for security. That is going to be one of the dominant factors in the minds of these men when they come out of the army—to find security. They are going to wonder if what they have been through has been worth while and what part they are going to play in society.

Following the world war there was a certain amount of rehabilitation. At that time, as far as rehabilitation of the forest was concerned, the scope was very limited and was confined only to a few students. The major field was agriculture, and we have seen the result of the so-called soldiers' settlements both in the form of individual farms and in the form of settlements. The picture after several years was unsatisfactory and many of the men were discouraged and felt that they had been treated with lack of consideration for what they had done.

When this war is over there are going to be many with pretty nearly the same attitude of mind. Let us remember that in training this army, they have paid more attention to training the men mentally than ever before. The use of machines requires a lot of training and there are men in every unit who get training as truck drivers, tractor drivers, etc. All the way through