

largely because our vast tracts of comparatively few species of mature and over-mature age classes have proven to be very susceptible to native-pest attacks.

"Canadian forest entomologists have recorded some outstanding successes against introduced foreign pests, through the application of biological control methods, using parasites, predators, and pathogenic micro-organisms. We are pressing our efforts in this field with increasing energy, both in our own laboratories and in collaboration with specialists in the United States and numerous countries abroad.

"Like the other member countries of the Commission, Canada would like nothing better than to be able to depend on the effectiveness of biological control. Undoubtedly, such natural control measures are essentially preferable to all others.

"Up to the present time, however, our best information does not encourage us to believe that all pest problems can be successfully met by biological control. It would be both dangerous and misleading to indicate, on the basis of available information today, that such techniques provide the answer to all our pest problems.

"Two factors must be faced in Canada: (1) There is good reason to doubt that these methods would be successful against some of our most important native pests; and (2) whereas once the forest economy of Canada might have been able to tolerate periodic insect attack losses over millions of forest acres, such toleration is out of the question today.

"With heavy investments in forest roads, improvements, manufacturing capacity, and the expansion of sustained-yield forestry, the forest economy needs - it simply must have - a continuing supply of wood - a continuing supply of healthy trees.

CHEMICAL CONTROLS

"Therefore, we have been forced to turn to the use of chemical sprays for relief from most of our destructive pests. It is in this field that there is a tendency of late, in the popular opinion, to condemn the principle when, in fact, it may be specific operational techniques that might better be criticized.

"In Canada, forest-spraying operations are only sanctioned by my Department when it is determined by thorough scientific survey that a stand is facing imminent mortality. That is the first criterion.

"Next, the spray attack is designed to reduce the severity of the insect infestation to a level that will permit a valuable stand of timber to survive. We do not seek to completely eliminate the pest from the whole infested area. Thus, sprayed areas have been limited to only a small part of the total infested area, with a consequent limitation of chemical distribution.

"Concurrent with the control projects which have been carried out by the provincial governments and the industry, the Department of Forestry has continued its programme of basic biological studies of the important pest species and critical assessments of chemical control methods. There has thus been progressive refinement in the means of assessing hazard and in the definition of control procedures based on most recent research results.

"Notwithstanding these precautions, Canada shares with other countries the hazards to fish and wildlife populations attendant on the widespread use of chemicals in forest-pest control. Arising out of these difficulties, an Interdepartmental Committee on Forest Spraying Operations was set up in 1958. This has resulted in very useful co-operation in research effort and exchange of information among the federal agencies concerned with forestry, fisheries and wildlife. Among the results of co-operative research promoted by this Committee. I should mention reduced dosages and alternative insecticides that, while still effective against noxious pests, are much less damaging to the aquatic fauna in forest streams.

"I think it is right to say that, over the history of forest-spray operations in Canada, the forest entomologists are periodically challenged to defend the necessity for this type of control action. It should be made clear, however, that the records show our experts will only agree to spray action when the biological facts dictate such action against the principal criterion of *imminent mortality* to the stand. . .

POWER EQUIPMENT TO EAST PAKISTAN

A \$6-million loan to East Pakistan, to cover the purchase of Canadian power-generation systems, was announced recently by Mr. Mitchell Sharp, Minister of Trade and Commerce. The agreement was negotiated under the Federal Government's long-term financing facilities, which are administered by the Export Credits Insurance Corporation. The funds advanced will cover the foreign-exchange costs of the first stage of a \$15.4-million development, known as the Isolated Power Generation and Distribution Project, to be carried out in Pakistan over the next five years. Repayment of the loan is to be made in 32 equal semi-annual payments, beginning in 1967.

The first phase of the project involves the purchase of Canadian engineering services and capital equipment to construct four power-generation and distribution systems to serve nine isolated towns in East Pakistan. The firm that received the order will provide engineers and procurement agents for the East Pakistan Water and Power Development Authority. According to a spokesman, the contract represents 50,000 man-hours of work for Canadian engineers.

Electricity will be generated by mobile individual units designed to conform with other recent installations in East Pakistan, to permit future integration of the systems.

TO SPEED INDUSTRIALIZATION

The power project has been given a high priority under Pakistan's second Five-Year Plan. When completed, it will provide dependable power facilities to 14 isolated rural towns in East Pakistan, with populations ranging from 20,000 to 70,000. The objective is to facilitate the process of industrialization and consequent growth in these areas. Situated far apart and at considerable distances from existing power grids, these communities of high population density cannot be economically connected with existing power sources.