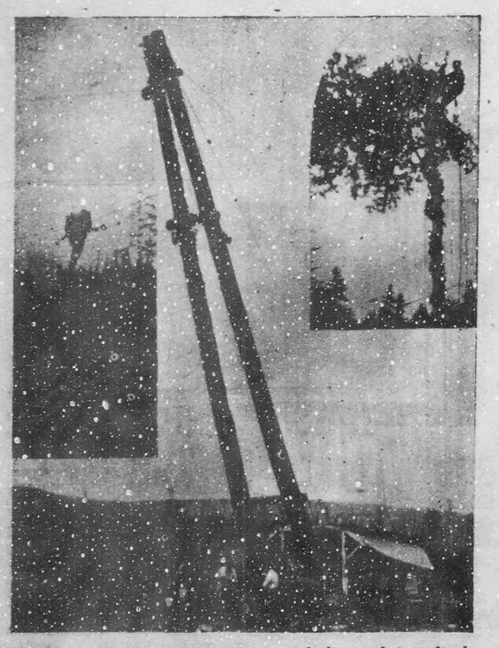

Picture of "A" frame showing, at top, sky-line, and, immediately below, main-line. At centre, on cross-piece, is the haulback: the other lines are the guy-wires. Left: carrage, showing pulleys, position of cables, and chokers attched to logs. Right topping a birch for a spare-tree.

LE BUCHERON MODERNE

by Wallace Montgomery

"Mechanicial Logging", what will they think of next? Atom bombs, robot planes, and now mechanical loggers. And what in the world is a "Blue Ox?". The poor perplexed student visualises the huge steer which legends tell us was seven axe handles and two plugs of tobacco between the eyes, in company with an iron man of Paul Bunyan proportions; these two monsters dashing through the woods, tearing up great trees and tossing them into the lakes and rivers, possibly guided by a graduate who follows them about pressing a lot of buttons in a mysterious black box, and . . . he gives up in despair.

In brief, Mechanical Logging is a fairly new system of getting logs or pulp to a river or railway, adopted from western logging, although on a much smaller scale. As a B. C. Logger once said, "Out there we get sixteen cords from one tree, but here you get sixteen trees for one cord". Everything is scaled down to suit the surrounding timber.

The usual way of getting logs and pulp to the rivers and mills is by contract; A jobber takes a contract for a certain number of cords, supplies his own camps, equipment, and hires his own men. This type of logging lasts only from late fall to early spring; for the balance of the year lumberjacks are compelled to find other means of a livelihood. In mechanical logging the cutting and hauling takes place all the year round. The men work an eight or nine hour day, are paid by the hour, with readjustments for overtime.

It is divided roughly into three crews, Cutters, Donkey crew, and Slasher crew.

A central or control point is chosen, where the 'A" frame will be erected. Lines of blazed trees run from the centre like spokes of a wheel, in a radius of 700' — 900', and ending at a tree which will be used for a "spar tree", a tree with the top cut off, on which pulleys and cables will be rigged so the timber can be lifted up off the ground clear of brush and stumps.

The cutters are assigned roads, and a cutting number. A road is the timber from the centre of the site to the spar tree, and as wide as the mid-points of the two rows of blazed trees. The cutter falls the trees toward the control point, and over the centre of his road, limbs them up to a 4' top leaving the full length in multiples of 3". He chalks his cutting number on the butt of each tree, and his total number of trees on the stumps. A scaler checks and tallies all the diameters, for he is paid on the basis of stump diameter, without regard to length of trees.

The Donkey crew, consisting of 6 or 7 men now move in. The Blue Ox is put into use. It is a truck engine mounted on skids 4" in diameter, and about 35' long. On these are two huge masts, 65" high, supported by four guy cables. Under a sort of shelter on the skids is a series of four drums of cables. The largest is the 'skyline", a cable running up to the top of the "A" frame, and out to the top of the spar tree, and is anchored to a series of stumps in a direct line with the suspended cables. On the skyline runs a carriage, supported by two pulleys. On the end of the carriage nearest the engine, a "Mainline" is attached, and on the other end is a 'haul-back' cable running out to the base of the spar tree, and back to the engine. Between these two cables hang the chokers, cables 8' 12' long, with iron hooks attached to the ends.

Two men attach the chokers to the logs. The Number One, or head choker man gives the signals to the "Whistle Punk" who handes an extension cord 700' - 900' long, connected to the battery, and blowing a set of horns loud enough to be heard by the engineer, and the whistle-punk himself. If the engineer is the least doubtful of a signal he will ask for a repeat by giving one long blast on the horns. The whistle-punk keeps as close to the choker men as possible, for one wrong signal could easily mean the death of these men. There is a complete set of signals handing every situation, from one blast to stop the main line to seven long blasts to indicate that a man has been killed.

At a signal from the whistle-punk the sky-line is tightened, lifting everything clear of the surroundings. The main line hauls the carriage towards the "A" frame with the butt ends of the trees trailing. When it arrives it is dropped roughly in a pile over a long skid, so that a tractor with a sulky, can back it over to the end of the pile. A heavy choker is attached around the pile and fastened to the wench, when drawn tight lifts the load clear of the ground, and the tractor starts off for the Slasher. This is a device for cutting full-length trees into 4' - 8' lengths. The logs are piled at the landing, two men roll them into a series of travelling rollers, which carry the logs to a table where they are cut into the desided lengths. The sawyer's helper rolls the logs from the table onto a carrier which conveys them to a waiting trunk. While it is on the chain carrier it is scaled and stamped. This way an exact count of the merchantable wood can be made.

Some companies favour a set of power driven saws for cutting up the trees. This eliminates the long haul for the tractor, and the setting up of the slasher. Some use a single mast over the donkey instead of two, while others use stumps instead of spar trees. All are trying their own pet theories on Mechanical Logging, and most are convinced it is here to stay.

DAM BUILDING ALONG THE RESTIGOUCHE

By Al Hubert

The Restigouche River and its tributaries lie deeply entrenched in the northern part of New Brunswick. From the steep slopes of these streams go vast quantities of wood each year to supply the pulp and paper industry. Delivery of this wood depends on good river driving conditions, the failure of which can cause serious delay and loss. The problem is to conserve sufficient water in the headwaters reigon to easure that all of the wood will reach the larger streams. Driving dams are built by means of which the wood can be cleared from the smaller brooks to deeper water.

The type of dam used in the Restigouche area is known as the "Rafter" type and allows a head of ten feet. It has one or more sluice gates and measures up to three hundred feet from bank to bank. When the supply of lumber is nearby, construction is relatively quick and cheap A reliable foreman with ten men can build one of this type(110 feet across) in six days at a cost of $1500 The crew breakdown is as follows:

1 Teamster (The horse should have a working knowledge of "Gee and "Haw".)
2 Cutters
2 Moss gatherers
3 Log handlers
2 Broad-axe men with a knowledge of carpentry

A bulldoser can make a very efficient job of clearing the dam site and graveling.

The first step is to locate and clear the site. All stumps and debris up to the high water mark should be removed. While this work is being done the cutters can cut lumber, and the broad - axe men can hew two sills and two gate posts. Thesills form the base of the sluicewaysand are cut thirty-three ft. long with a ten inch top. They are squared on two sides so that the hewn sides form a right angle, and in such a manner that when the butts are placed together two flat sides are on top and two face inward toward each other. The gateposts are cut sixteen feet long and are hewn square with a side of one foot. A square notch is cut lengthwise in each post as a runaway from the gate. A four inch tenon is cut on the base of each post so that the post leans to the upriver side of the dam. The lean is one half inch to the foot.

At this stage building can begin. A log frame is laid where the gate will be located, and the sills are levelled on this frame, five feet apart, with butts downstream. They are fastened to the frame with drift bolts. On each sill a mortise is cut in the centre and both ends. The gate posts will fit in the centre, and supporting posts (8' x 8" x 8") will fit in the ends. Opposite the centre of the sills and parallel to them, short logs are laid 8 feet apart. Across these logs will be placed wing logs which will run from the sills to the bank and may be in one or more sections. This process is repeated, the logs parallel to the sills being called "ties", and those running to the bank "cross ties". The ties will be on an angle of 45 degrees with one end anchored firmly on the bottom of the dam. These are drift boited and spiked to the cross ties underneath. This frame work is built up until the desired height is reached. A flooring of logs is then put on so that each log fits snugly against the next. The practice is to place one large log followed by three or four smaller ones. When the dam is gravelled there will be less chance of the gravel washing off. At the toe of the dam short logs are placed as shown above. A gap is left at the sluiceway to allow the water to pass underneath teh dam during construction. The chinks between the logs are now caulked with moss. Masses of evergreen branches are placed along the toe of the dam in order to hold the dam in place.

Careful supervision is necessary when the gate and sluiceway are being constructed. A platform is built on the supporting posts of the down river side and mortised into the gateposts. The gate frame is made on this platform and is then fitted from there into the gate slot. The frame is made of 7" x 6" spruce deal into which 2 x 3 hardwood slats are fitted at one foot intervals. Meanwhile the floor of the sluiceway is being made of poles and a hardwood block is fitted where the bottom of the gate will rest. A deal wall is built along the sluiceway to keep the gravel from washing off the dam. The deals are placed so that the gate can move freely up and down in its slot. When this is done the gate frame can be hoisted into place and the planks fitted. The gate is hoisted by the lever and fulcrum system from the platform mentioned above.

In order to prevent the water from undermining the dam, an apron or trough is built on the end of the sluiceway. This directs the stream of water farther from the dam and eliminates any possibility of a washout. The bulldozer can now begin to gravel. This is usually put on to a depth of two feet. The gap in the toe of the dam at the sluiceway is now closed with deal or logs and then graveled. The water can flow through the sluiceway and the dam is ready to operate.

A good feature about this type of a dam is that several thousand cords of pulpwood could be piled in the pond and sluiced through the gate as desired. This method has been successfully used in the Restigouche area.

Forest Vertebrate Fauna

by T. H. Lothian

Forest management may be considered from several view points. For, some, the chief purpose and perhaps only purpose of management is to produce a crop of timber at a profit. For others the chief value of the forest is for recreational purposes and to them forest management means producing a crop of wildlife each year so that our forests attract lucrative tourist business. It may be the duty of foresters to combine the two forms of management sucessfully or it may be better to classify land as to its best use and manage for recreational purposes only marginal and submarginal land. Whatever the purpose, management cannot overlook the fact that the forest is more than the trees. It is a dynamic biological unit involving the interactions of climate, soil, flora and fauna. The purpose of this article is to present briefly some aspects of the role of vertebrate fauna in the forest.

Rodents and insectivores form the major group of animals in the forest. Hamilton and Cook reported in 1940 a population of 305 small mammals per acre in a spruce flat in New York state as compared with two or three nesting pairs of birds per acre. These mammals were rodents, chiefly mice, and insectivores, moles and shrews. This is a very high figure but in our forests these animals are present in significant numbers.

The evil that small mammals do lives after them, the good is often interred with the bones. But there is good to be said of them. Hamilton and Cook point out that a large percentage of the food of small mammals is insectivorous -75% in the case of shrews and moles. In 1941 Prebble found that shrews, mice, and squirrels where the chief predators of the cocoons of European spruce sawfly.
Other investigators have reported small mammals as predators of gypsy larvae. During life the rodents by their activity increase the aeration of the soil and in death contribute their bodies and interred bones to the humus and mineral supplies of the earth.

Damage by small mammals may be extensive especially in regions of either natural or artificial regeneration. These mammals along with birds have formed one of the serious obstacles to reforesting an area by reseeding as reported by Smith and Aldous in 1947 in connection with reseeding a coniferous forest in the United States. Removing the rodents by poisoning and trapping is an expensive and temporary measure of protection. Planting under strips of screening will protect the seeds until they germinate but is of very limited application. Pelletting the seeds seem to be the best method of getting seeds planted and protected. In any case rodents may decrease the profit when a forest crop is to be grown from seed.

There are many reports of rodent damage to seedlings and mature trees. Littefield, Schoomaker and Cook reported, in 1946, field mouse damage to coniferious plantations killing many of the trees. The only common conifer not attacked was white spruce. Krouch in 1945 had arrived at the conclusion that rodent control might be necessary in some areas to protect seedlings until they are a year old. Cook and Robeson reported, 1945 that the varying hare killed white and red pine and white spruce seedling less than four feet tall. Stillenger, 1944, Schantz-Hansen 1945, and Balch 1945, as well as others have reported damage to mature trees by squirrels girdling and trimming trees. This damage may interfere with the trees growth or kill the tree either directly or indirectly by admitting pathogenic organisms through the wounds.

The conclusion that small mamals damage seedling and mature trees is unavoidable. The damage will however vary from place to place and seldom become a serious problem. Logging operations result in an increased mammal population. Where the forest is harvested by clear cutting or by clear cuting with standards, damage by vertebrates is likely to be more extensive due to the large areas of reproduction that result. Damage by rodents in virgin forest or mature stands is negligible. Trees may be killed by squirrels, hares and porcupines and it is easy to conclude that the damage is great. Though the damage to the individual tree may be great the effect on the final crop may actually be favourable due to the thinning that results.

Deer occasionally become a serious problem in areas of regeneration where the deer population is heavy. These animals occur in herds on the the southern slopes in New York State in the wintertime and Recknagel reported, 1941, serious browsing by deer on red pine plantations in this area. Cook concluded in 1946 that summer browsing by deer had little effect in cut-over hardwood lands. Wherever deer or moose occur in numbers there may be damage to trees by horns and hoofs which cause wounds that admit fungi.

Birds may do extensive damage to nature trees in isolated instances. Occasionally large numbers of grosbeaks or grouse may destroy so many of the terminal and lateral buds in stands of Scotch, red, and white pine that the value of the stand is seriously impaired. The holes punched by sapsuckers render trees vunerable to fungal attacks.

On the other hand birds may be very valuable agents in the control of noxious forest insects. To Thill observed that vireos were important agents in the control of fall webworm in the Fredericton area. Watson recorded woodpeckers as being a factor in the control of bark beetles and various investigators have noticed the importance of birds in the budworm areas. Birds and mammels have relatively little importance in the control of outbreaks such as that of the budworm but they may be very important in preventing such an outbreak getting under way.

Except in areas of regenerations and then only occasionally the vertebrate fauna seldom form a problem for the forest manager. Generally speaking conditions favouring the development of a good forest also favour the vertebrate fauna. Where you have an adequate growing stock containing a good representation of species of different age classes on a good soil covered by a well developed shrub and herb layer you will have a balanced vertebrate fauna living in harmony with the other members of the biological unit.

It would seem then that if good forest land is developed primarily for its timber value the wildlife will be plentyiful and will contribute to the value of the forest by aiding in insect control and by increasing its recreational and esthetec value. Marginal and sub-marginal lands present special problems but here the emphasis might well be on wildlife development with timber values being of secondary importance.

The Case For Specialization

Continued from Page 2

What is needed is some intermediate stage, a junior college perhaps where not only will the student be taught cultural subjects but he will also learn to appreciate the wealth of learning available to him if he understood where to seek it. Basically the average applied science student lacks a knowledge of the proper use of a library, be it public or university. If this failing was corrected before the college level was reached there would be little basis for the educationists fear of the culturally deficient generation.

DEFINITIONS

An Artsman—A man who learns to appreciate the things he'll never be able to afford.

An Engineer: A man who learns how to afford the things he'll never be able to appreciate.