The plant specimen should be partially dried in a conventional press, and carefully mounted on standard herbarium mounting board with short pieces of transparent tape. Cover both sides of the mounted specimen with plastic that has been cut to leave a $\frac{1}{2}$- to $\frac{3}{4}$-inch border at the edges of the mounting board. Both sheets of plastic should be cut to the exact same size. The plastic can be temporarily fixed to the mounting board with a static charge obtained by rubbing it by hand when it is in place. Place the specimen face down on a sheet of foam rubber, and cover it with a sheet of clean paper. Place this "sandwich" in a photo-mounting press that has been heated to about 250°F., and leave under very high pressure for about 30 to 40 seconds.

The foam rubber pad is needed to prevent air pockets from forming beneath the plastic. Maximum pressure can be obtained by inserting a board beneath the foam rubber pad. The thickness of the board will be determined by the make of photo-mounting press. Presses that are equipped with lightweight alloy sidearms should be re-equipped with steel arms, because of the high pressure needed. Both sides of the mounting board should be laminated to prevent curling.

Sealamin plastic is obtainable in 200-foot rolls, either $11\frac{1}{8}$ or 20 inches wide. The cost of laminating an $8\frac{1}{2}$-×11-inch sheet is 11 cents, and 58 cents for a 16-×20-inch sheet. These costs are about one-quarter of the commercial rates for laminating.

The procedures outlined can also be used to treat maps, books, photographs, identification cards, and other paper material used in the field. Treated material has the advantage of taking grease pencil marks, which can be erased later.—J. A. Baranyay and P. S. Debnam.

BRITISH COLUMBIA

Sampling Douglas-fir Tussock Moth Populations.—Outbreaks of the Douglas-fir Tussock moth have periodically caused heavy defoliation and tree mortality in the Interior dry-belt forests of British Columbia; they have been of short duration and the last severe damage occurred in 1946-49. As the female moths are wingless and lay their eggs on the cocoon the spread of infestations is dependent upon drift of young larvae on air currents, so that a reliable method of estimating populations of the overwintering egg masses would be useful in forecasting infestation trends.

In the summer of 1961 a number of localized infestations occurred in the North Okanagan, indicating that a rapid population buildup was in progress. Three sample plots were established in separate areas to detect any future expansion of the infestations, to assess tree mortality and to obtain information on distribution of cocoons and egg masses in the trees.

Sampling for intra-tree distribution was accomplished by cutting four co-dominant trees in each plot—two with light defoliation (imperceptible to 15 per cent) and two with heavy defoliation (75 to 100 per cent). The sample trees ranged from 7 to 10 inches d.b.h., with a mean height of 63 feet (40-80 ft.), mean length of living crown 36 feet (25-50 ft.) and mean length of bole below the first live branch (hereinafter referred to as dead crown) 28 feet (12-44 ft.). The dead crown varied from many branches with a network of twigs covered with lichens, to a few bare sticks with little surface area. Cocoons were counted on three branches from each upper, middle, and lower section of both the living and the dead crown, and on 1-square-foot sections of the bole at 10-foot intervals, beginning at breast height. They were dissected to determine sex, emergence success, and cause of mortality. Sex determination was based on pupal characters, and was possible in 78 per cent of the cocoons examined; in the remainder the larvae had died before pupation, or pupal characteristics had been destroyed by dipterous larvae.

As data for trees cut in each plot indicated a similar pattern of distribution, the figures were combined, and appear in Table I in condensed form.

In addition to those taken in samples from felled trees, cocoons were gathered near ground level from dead and lichen-covered branches, tree trunks and green foliage of Douglas firs; one sample of 200 cocoons was taken from the foliage of understory choke cherry and Douglas maple. Results of examination of these cocoons are summarized in Table II.

The severely defoliated trees contained about twice the concentration of cocoons of the lightly defoliated trees, whereas the average concentration of egg masses was about equal; this was due to the higher pupal mortality and the lower proportion of female cocoons in the severely defoliated trees. The higher densities of cocoons and egg masses were found in the upper crown of the lightly defoliated trees, and in the lower crown of those with heavy defoliation, indicating a downward movement of larvae with depletion of green foliage. This is also suggested by a higher cocoon density on the dead branches of heavily defoliated trees and a lower cocoon density in the dead crown of lightly defoliated trees.

A larger porportion of cocoons collected in the living crown were females in the lightly defoliated trees, while the proportion of females in heavily defoliated trees was lower; the reverse was true for the dead crown. This indicates that the male and female larvae differ in response to host tree conditions when selecting a pupation site, the females preferring to cocoon on green foliage and the males wandering more or less at random. Further evidence of this difference is suggested by the higher incidence of female cocoons near ground level on Douglas firs (presumably representing migrants from heavily defoliated trees) and the very low percentage of female cocoons on deciduous foliage (Table II). A tendency for female larvae to pupate on green foliage of the host tree should be advantageous considering that the adult female is flightless and normally deposits the egg mass on the cocoon.

TABLE I

Douglas-fir Tussock Moth Cocoons Sampled from Two Lightly and Two Heavily Defoliated Trees at Each of Three Plots near Vernon, B.C., Oct., 1961

	Light defoliation				Heavy defoliation			
	Living crown			Dead Crown	Living crown			Dead crown
	Upper	Mid	Lower		Upper	Mid	Lower	
Branch area sampled (sq. ft.).	66	128	135	164	77	111	122	77
Cocoons per 100 sq. ft.........	189	74	80	37	156	193	223	210
Sex ratio of pupae (% ♀)......	60	45	69	33	39	38	43	50
Egg masses per 100 sq. ft	60	16	28	12	26	28	36	31
Male cocoons								
% successful emergence.......	77	64	53	86	65	51	51	43
% mortality—parasitism......	18	32	40	14	31	38	43	53
% mortality—other causes....	5	4	7	0	4	11	6	4
Female cocoons								
% successful emergence........	74	54	60	58	49	43	51	35
% mortality—parasitism......	21	31	34	36	44	47	43	56
% mortality—other causes....	5	15	6	6	7	11	7	10
% emerged without oviposition	8	0	4	0	5	3	0	4
Bark area sampled (sq. ft.)...	(	19	)	20	(	18	)	19
Cocoons per 100 sq. ft.........	(	16	)	40	(	139	)	100
Sex ratio of pupae (% ♀)......	(	0	)	50	(	30	)	18
Egg masses per 100 sq. ft......	(	0	)	0	(	16	)	0

TABLE II

Analysis of Douglas-fir Tussock Moth Cocoons Sampled Near Ground Level, Vernon, B.C., August, 1961

Plot	Host	Cocoons examined	% successful emergence	Sex ratio of pupae (% female)
1	Douglas fir....................	404	40	62
1	Choke cherry and Douglas maple (foliage).............	200	77	3
2	Douglas fir....................	400	33	64
3	Douglas fir....................	435	57	62

In general, incidence of successful emergence of adults decreased with crown level of both lightly and heavily defoliated trees, being lowest from Douglas fir sampled near ground level (see Tables I and II). Pupal mortality in both the living and dead crown of the severely defoliated trees was consistently higher among females than males.

In any consideration of cocoon sampling for population prognoses of the Douglas-fir tussock moth, attention should be focused on egg masses rather than on total number of cocoons, because of variables such as distribution and mortality differences between sexes. Also, sampling of lightly infested trees which invariably may be found in the periphery of infestations may be more meaningful because larvae on or near green Douglas-fir foliage are more likely to become established, and by being concentrated in the upper crown they are in a better situation for aerial transport to other trees.—S. F. Condrashoff and J. Grant.

Phenological Observations on Western Hemlock Dwarf Mistletoe (Arceuthobium campylopodum Gill. forma tsugensis).—Phenological observations on dwarf mistletoe were carried out at two localities: in the University Campus Forest at Vancouver, B.C. and in the University Research Forest near Haney, B.C. The trees sampled on the Campus Forest were growing in a good site (site index for hemlock is 160), those on the Research Forest were growing in a poor site (site index for hemlock is 70). A total of 194 infections were checked at two-week intervals in the period February 21, 1959, to February 10, 1960, on the Campus