or depleted some attractive substance. It is probable that the heat treatment destroyed or inhibited attractant formation. On the other hand, lessened attack on the unautoclaved aged wood may be attributable to continued cellular activity. Conditions during aging were similar to those described by Wilson (8) as favourable for prolonging the life of sapwood cells of oak and ash. Under such conditions, the living cells deplete starch reserves that reach a maximum during midwinter in these species. It is reasonable that this depletion principle applies to our aged Douglas-fir, but iodine tests both at the time of felling and after aging failed to reveal the presence of starch.

The experiment was limited in scope but it serves to point out the need for more information on the occurrence and seasonal fluctuations of various sapwood constituents in relation to ambrosia beetle selectivity.

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On the iniquity of blanket sprays and dusts

One afternoon in 1946 as soon as DDT became available, I treated several quarter-acre plots on the Lac du Bois range north of Kamloops, with 3% DDT in diatomaceous earth, put out with a rotary hand duster, in the hope of controlling grasshoppers. Vegetation on the plots consisted of mixed grasses from 12″ to 18″ high and Russian thistle, and harbored several species of grasshoppers of mixed instars (hereafter caller groppers).

The plots were examined next forenoon. The effect on the groppers was negligible and continued so, but on some other insects it was literally shocking. Leafhoppers and mirids were wiped out and many dead and dying beetles, for the most part harmless, lay on the ground. Mr. Hugh B. Leech identified the beetles as: *Percosia extensa* Casey, *Harpalus basilaris* Kby. (*obesulus* Lec.), *Amara* (Celia?) *subaenea* Lec., and *Amara* sp. (Carabidae); *Cicindela longilabris montana* Lec. (Cincindelidae); *Coniontis oblita* Casey (Tenebrionidae); *Serica anthracina* Lec. (Scarabeidae); and *Brachyrhinus ovatus* (Linn.) (Curculionidae). *B. ovatus,* the strawberry root weevil is an important pest elsewhere but is harmless on a cattle range five miles from the nearest cultivated plants.

This dust tested again on Canada blue grass without weeds, killed off the large population of leafhoppers present and a few ground beetles. It was 12 days before the area began to be repopulated centripetally from the surrounding vegetation.

At Quesnel one afternoon in 1948 I dusted a considerable area of tall, sparse-growing alfalfa with 3% DDT dust to watch its effect against a heavy infestation of *Lygus oblineatus* Say and *L. elisus* Van D. and some leafhoppers; by next morning not one of these insects was alive on the plot and again it was nearly two weeks before the area began to be repopulated. The effect of the dust on insects other than Hemiptera-Homoptera was not observed.

At Vancouver one evening in early May 1957 I sprayed some lilac bushes and a tall privet hedge with a mixture of DDT and benzene hexachloride against the leaf miner *Gracilaria syringella* Fab. Next morning *Carabus nemoralis* Mul. beetles were lying paralyzed in some numbers up to 9 ft. from the hedge and others continued to die even 13 days after the spraying. Carabidae or ground beetles are very susceptible to modern residual insecticides. Every autumn numbers of *Pemphus angusticollis* (Mann.), *Carabus granulatus* L., and *C. nemoralis* Mul. find their way into the basement of our home and run over the floor which has had residual insecticides splashed on it and the beetles very soon become paralyzed and die.

These records show the possibly unavoidable slaughter of innocents, but the situation will become really serious in many large gardens in Vancouver which have fallen into the hands of men who glibly talk the owners into yearly contracts for periodical blanket sprays for controlling ALL insects. These operators use very powerful sprayers mounted on trucks with two large tanks containing two spray mixtures. The spray gun can throw a towering jet that will reach to the top of a 30-ft. tree, or, by a twist of the wrist, a very fine mist. In both cases the jet is almost of gale force, bending the vegetation right over.

I asked an operator what he was using and what insects he was supposed to kill: he had no idea whatsoever but stated that the company for which he worked had many contracts and he was working seven hours overtime per day to cover the ground. So he was drenching everything from tall Colorado blue spruce, Douglas firs and maples to border plants whether they needed it or not. I examined parts of one garden ahead of the spray and found no pests anywhere.

Granted that the vacua formed by such wholesale sprays will gradually fill in from surrounding properties, but the whole principle is wrong from a biological standpoint since it has been shown by many entomologists that modern residual insecticides may be more potent against parasites, especially Hymenoptera, than against the pests themselves.—*G. J. Spencer, Dept. of Zoology, University of British Columbia.*

BOOK REVIEW

Annual Review of Entomology, Vol. 2. (*E. A. Steinhaus* and *R. F. Smith*, editors). 1957. Annual Reviews, Inc., Palo Alto, Calif., pp. vii - 407.

The first volume in this series (1956) was widely and favorably reviewed. Now appears Volume 2, thinner by 59 pages but maintaining the high standard, and with it the prospectus for Volume 3. The bindings are good and the format attractive considering the limited budget.

Minor useful items are the running page titles of authors and subjects, the index of authors quoted and the adequate subject index. Less readily usable are the literature citations without titles, more than half of them arranged non-alphabetically. The brevity is necessitated by questions of space and economics, but the citations might be rearranged with little trouble.

The chapters originate as follows: from the U.S.A. 7, the U.K. 7. Canada 3, Australia 2, and Israel 1. The topics and authors follow: Digestion in insects, *D. F. Waterhouse*; Some aspects of intermediary metabolism of carbohydrates in insects, *M. Rockstein*; The physiology of insect cuticle, *V. B. Wigglesworth*; The comparative morphology of the insect head, *E. M. DuPorte*; Cytogenetics and systematic entomology, *M. J. D. White*; The taxonomic significance of the characters of immature insects. *F. I. van Emden*; Caste determinations in social insects, *M. V. Brian*; Dynamics of insect populations, *M. E. Solomon*; The synoptic approach to studies of insects and climate, *W. G. Wellington*; Insect migration, *C. B. Williams*; Recent advances in veterinary entomology, *A. W. Lindquist* and *E. F. Knipling:* Transmission of disease agents by Phlebotomine sand flies, *S. Alder* and *O. Theodor*; Genetics of insect resistance to chemicals, *J. F. Crow*; The mode of action of insecticides exclusive of organic phosphorus compounds, *P. A. Dahm*; Chemistry and mode of action of organophosphorus insecticides, *E. Y. Spencer* and *R. D. O'Brien*; The behaviour of systemic insecticides applied to plants, *S. H. Bennett*, Aerial application of insecticides, *F. E. Weick* and *G. A. Roth*; Cotton insects and their control in the United States, *J. C. Gaines*; Insecticidal control of the spread of plant viruses, *L. Broadbent*; Pollination of alfalfa and red clover, *G. E. Bohart*. It is a healthy sign that among 72 authors in the 3 volumes is a good representation of young men in full research production, not all of whom are entomologists.