

## Buffalo Pound Park

A spanking new exhibit room has recently been added to the park entry office, and the major exhibit is very nearly complete. The theme of the center's exhibits will be "The Bison and Man", and the major exhibit is a life-sized replica of a buffalo pound, with a huge bull just entering the crude corral.

The Buffalo Coulee Nature Trail is a half-mile route starting from the Maple Vale Campground. It follows the bottom and side of a ravine, and features the typical flora and fauna of these important wildlife refuges. The Big Valley Trail is longer; it descends into a wide valley that runs down to Buffalo Pound Lake.

## Battlefords Park

The Wintergreen Trail is a tribute to park staff who have independently developed this excellent trail. The 3/4-mile route leads up a forested coulee, and returns across a prairie hilltop. On-site interpretation is presented by typed labels protected by wooden "flip-boards".

## Condie Nature Refuge

For the past three years seasonal naturalists have provided group tour guided walks and other programs for groups visiting the refuge. Many private groups and hundreds of school children have been able to take advantage of this service.

The Nature Center Exhibits explain the glacial origin of the Condie terrain and discuss the natural and human history of grassland and marsh.

The Boggy Creek Nature Trail runs along the valley of this slow-moving stream. Interpretive panels give added information on subjects of interest.

Much still needs to be done to bring about the kind of Interpretive Program that we all would like to see. With the continuing support of the Natural History Societies, school teachers and Outdoor Education Associations, we should be able to develop a program in Saskatchewan that rivals the finest that exists anywhere. We're working on it!

# PEST CONTROL

by MAURICE E. TAYLOR\*

Over the past several years people have become increasingly aware of environmental concerns regarding the use of chemical pesticides. Reaction to this concern has resulted in much anxiety and confusion for the general public and the homeowner in particular. The homeowner now feels that he is confronted with a dilemma: can he safely combat pests in and around his home and property without hazard to himself and the environment, or must he stand by and watch insects and other pests ruin his garden and the landscape?

While this concern is understandable, the situation really is not that serious. Home ground plantings of or-

namentals, fruits and vegetables can be safely protected from serious pest injury by good management practices and, if necessary, by the proper use of pesticides that have little or no harmful effect on the environment.

The number of non-chemical methods used to manage or control pests can be as numerous as the people involved. Many gardeners have their own "pet" methods that may work well for them but not prove satisfactory to others. The following are a few effective and practical management practices that help prevent or reduce damage from garden pests:

(1) *Resistant plant material* — Always

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low varieties of fruits, vegetables and ornamentals that are recommended for our area by provincial horticulturists. Many of the recommended varieties have some resistance to pests or, because they are adapted to the area, are better able to tolerate moderate infestations of insects or plant diseases.

(2) *Cultural methods* — Use cultural practices that provide plants with the best growing conditions possible. Vigorous, healthy plants are less likely to suffer pest injury. Weeds should be eliminated by timely tillage because they not only rob moisture but may harbour insect pests and plant diseases. Sanitation is very important. Plant debris may contain overwintering insects or disease organisms and should therefore be removed from the garden in the fall or buried or used in a compost pile. Wherever possible, rotation of garden crops is a good practice. Potatoes in particular should not be grown on the same soil two years in succession.

(3) *Mechanical control* — The use of mechanical devices such as barriers, traps, nets and even hand collection often offers quick and positive results. The home gardener with relatively few plants can put to use a number of effective and economical methods of this kind. Cardboard or metal collars placed around transplants will prevent cutworms from cutting off the plants. Hand picking of caterpillars of various kinds — hornworms, woollybears, armyworms, etc. — is often just as practical as using an insecticide. Slugs can be trapped and collected under pieces of board or bark.

(4) *Biological control methods* — Natural control forces including parasites, predators and pathogens play an important role in keeping insects under control. Birds should be encouraged and predatory insects such as ground beetles and ladybird beetles should not be killed. The practice of importing ladybird beetles and praying mantis for release in gardens has not proven very useful; however, native ladybird beetles often become abundant enough to play a significant part in controlling aphids.

Naturally-occurring bacterial and fungal diseases of insects only oc-

asionally result in effective control of infestations. However, one bacterium, *Bacillus thuringiensis*, has been propagated by man and can be applied on gardens and other crops to control several kinds of caterpillars without hazard to man or wildlife. It will be available commercially in Canada this year.

*Control with Pesticides* — There are times when non-chemical methods of control do not perform as expected and pest epidemics may develop in spite of the gardener's best efforts. An insecticide may then be required to bring the pest population down to a tolerable level.

The objective of control should be to reduce the population to a non-epidemic level, not necessarily to eliminate it. It should be remembered that not all insects are pests; in fact, many of them are beneficial. Pesticides should be used with discretion, therefore, and directed as far as possible only at the pest species.

The choice of pesticides should be limited to those with moderately low human and animal toxicity so that they can be used safely on gardens and around the home. They must also possess another essential characteristic: the ability to degrade or break down into non-toxic substances soon after application. Such degradable products do not affect the environment adversely.

Among the readily available insecticides and miticides that have these characteristics and are recommended for use in Saskatchewan gardens are: carbaryl, diazinon, kelthane, malathion, methoxychlor, pyrethrins, and rotenone. The chances of adverse hazards arising from the proper use of such pesticides is nil.

*Integrated control* — A method widely used in the solution of pest problems is integrated control. This is the judicious use of a combination of non-chemical or management practices and pesticides. This technique appears to offer the best solution to pest control with the least adverse effect on the environment.