IN SECTIONS of the United States and Canada where low temperatures prevail for part of the year, accompanied by snow, rain or fog, a fungus disease known as snowmold annually does considerable damage to many fine turf areas, notably golf course greens. Scientific investigations have succeeded in designating *Fusarium nivale* as the snowmold organism. Although snowmold has been known for a comparatively short time in this country, it has been recognized in Europe for over a century. There it has been found in fields of grain in the Scandinavian countries, in Germany and in Austria.

Among turf grasses, strains of creeping bent are subject to infection, susceptibility varying with the species. Red fescue has proved especially susceptible. Kentucky bluegrass is more resistant than fescue, but not as resistant as some strains of bent.

Turf areas in Minnesota, Wisconsin, Michigan and several regions of Canada have been subject to most severe attacks, while reports of the disease on turf as far south as Virginia have been received. *Fusarium nivale* (the Latin word “nivale” meaning pertaining to snow) is a fungus organism which remains dormant in the soil during most of the year.

Most *fusaria* develop best at high temperatures, but in this respect *F. nivale* is an exception, growing well at any ordinary soil temperature, but attacking grass only at very low temperatures. Successful inoculations with *F. nivale* were made at temperatures ranging from 32° to 39° F. At these low temperatures spores are formed either in salmon-colored masses of millions of spores, or singly on the mycelium.

How Snowmold Attacks Grass

Apparently the organism attacks the grass leaves first, and if conditions are favorable invades the stems and roots, although the actual relation between parasite and host is not yet fully understood.

The disease is not directly caused by snow, although the name snowmold has led some to this misconception. Attacks generally appear during or immediately after snowfall periods. Its spread is encouraged by excessive moisture due to melting snow, heavy fog or rain in connection with low temperatures.

It has been observed that when snowfall occurs before the ground freezes, the resultant damage to turf from snowmold is more pronounced. Under such conditions frost does not penetrate the soil to the extent it otherwise would, and the fungus may become active at any time during a thaw when favorable temperatures prevail.

Coverings or mulches of straw which tend to keep the grass wet, especially after growth has commenced in spring also increase the possibility of attacks, and such practices should be avoided.

Saucer-shaped greens and poorly-
drained areas are most subject to severe
injury. Infected areas may be seen as early as
December in sections where snow does
not remain on the ground throughout the
winter and thaws are frequent. During
thaws, large snow banks create ideal con-
ditions for the development and spread
of the disease.

Snowmold Is
Plainly Identified

Viewed from a distance, snowmold may
resemble the so-called winter kill injury,
but closer inspection reveals characteristic
details which will leave no doubt in the
mind of the observer as to the identity of
the disease.

The affected areas may vary from an
inch or so in diameter to several feet, but
are commonly seen as more or less uni-
form-sized patches a foot or less in diam-
eter, straw-like or dirty-gray in color. In
the late fall or early spring, strips of
green turf may be seen dividing the in-
jured areas. The patches are covered with
a scum-like mycelium which takes on a
salmon-pink cast on exposure to the sun.
Microscopic views may reveal the sclerotia
which appear as minute black or reddish
bodies scattered over the grass leaves.

Snowmold may be diagnosed on sight
once one has become familiar with its
details.

Anyone familiar with turf production
will readily understand that any treat-
ment administered the grass which tends
to produce weak, succulent growth will
inevitably increase danger of infection, es-
pecially if such methods are employed in
the late fall, and extreme caution in this
respect is advised. The selection of resis-
tant varieties for planting, and building
up a healthy turf through proper fertilizer
programs and maintenance methods will
pay large dividends, not only as an in-
surance against snowmold attacks, but
from other diseases as well.

With all due precautions in this respect
however, the organism is likely to devel-
op under favorable conditions, thus a
knowledge of preventive and control
measures is imperative.

Describes
Control Methods

Snowmold in mild form may be con-
trolled by a brisk brooming or sweeping
of the affected areas as soon as they ap-
pear. Steel or bamboo lawn brooms are
ideal for this purpose. A little detailed
attention in this respect assists in elimi-
nating possible permanent injury, and
greatly aids recovery of infected turf.

Waiting until the disease appears, how-
ever, may be costly, where environmental
conditions favor attacks.

Mercurial fungicides have proven effec-
tive and practical in the prevention and
control of Fusarium. There are a num-er of commercial fungicides which will
be found effective if used according to the
manufacturer's directions.

Corrosive sublimate (bichloride of mer-
cury) and calomel have been found satis-
factory in preventing snowmold, and may
be used in either the dry or liquid form.
Dry applications have the advantage of
eliminating the use of heavy equipment at
a time when some difficulty might be ex-
perienced in reaching the areas where
treatment is needed, and will serve for
possible subsequent winter treatments
when water will not be available on the
golf courses.

If difficulty is experienced in dissolving
corrosive sublimate, adding one pound of
common salt to every four pounds of the
fungicide will aid in making the solution.

Calomel used in the liquid state requires
constant agitation to keep it in suspension,
and if used in this form, a power sprayer
equipped with a good agitating device is
recommended.

A mixture of 1/3 corrosive sublimate
and 2/3 calomel is recommended by the
USGA in effecting a more speedy and
lasting control.

Using 2 to 5 oz. of the fungicide to
every 1,000 sq. ft. of turf (the larger
amounts being used on areas which are
particularly susceptible), dissolve the ma-
terial in 50 gals. of water and apply with
watering cans or sprinkling cart. If a
power sprayer is employed, 16 to 20 gals.
per 1,000 sq. ft. will give good coverage.

If the dry method is used, mix the re-
quired amount of fungicide with a pail of
sand for each 1,000 sq. ft. to be treated.
Applications should be made as late in
the fall as possible.

Snowmold is by no means a matter
to be neglected if our sports areas and
lawns are to retain a fine standard of
maintenance. The increase in occurance
and severity of attacks of this fungus is
demanding a more detailed control pro-
gram on the part of greenkeepers. It
is not uncommon for golf clubs to find
their greens partially ruined when spring
thaws arrive. Many areas which are
subject to attack seldom recover until
late in the playing season, if at all,
and costly repairs are necessary.