storage decays. *Control:* Control in field by sanitary measures and fungicides. Store infected lots for short periods only.

Mosaic

Leaflets mottled, stalk shows brownish sunken streaks. Badly affected stalks shrivel. *Control:* Eradicate weeds that carry the virus. Grade out all discolored stalks at packing time.

Watery Soft Rot (*Pink Rot*)

Often severe on field-frozen celery and on stock harvested after prolonged cool, moist weather. In early stages often has a pink color. *Control:* Grade out all discolored stalks at packing time. Storage at 32 F will retard but not prevent disease.

CUCUMBERS

Anthracnose (*Colletotrichum*)

Circular, sunken, watersoaked spots that soon produce pink spore masses in center. Later spots turn black. *Control:* Use disease-free seed and fungicidal applications in field.

Bacterial Soft Rot (See Table 1, Note 1.)

Bacterial Spot (*Pseudomonas*)

Small, circular, watersoaked spots; later chalky or moist with gummy exudate. *Control:* If possible, avoid shipping infected cucumbers. Pack dry and maintain as low humidity and temperature as practicable.

Black Rot (*Mycosphaerella*)

Irregular, brownish, watersoaked spots of varying size; later nearly black. Black fruiting bodies sometimes present. *Control:* Exclude from pack if possible. Reduce carrying temperatures to about 45 F.

Cottony Leak (*Pythium*)

Large, greenish, watersoaked lesions. Luxuriant, white, cottony mold over wet decay. *Control:* Exclude from pack if possible. Reduce carrying temperatures to about 45 F.

Freezing Injury

Large areas in cucumber soft, flabby, watersoaked, and wrinkled, especially toward stem end. *Control:* Prevent exposure to temperatures below 31 F.

Chilling Injury

Numerous sunken, slightly watersoaked areas in skin of cucumbers after removal from storage. Found on cucumbers stored for longer than a week at temperatures below 45 F. *Control:* Store at temperatures between 45 and 50 F for not longer than 2 weeks.

Watery Soft Rot (See Table 1, Note 4.)

EGGPLANT

Cottony Leak (*Pythium*)

Decayed areas large, bleached, discolored (tan), wrinkled, moist, soft; later with abundant cottony mold. *Control:* Reduce carrying temperatures to about 45 F.

Fruit Rot (*Phomopsis*)

Numerous, somewhat circular, brown spots later coalescing over much of fruit with pycnidia dotting older lesions. Very common decay of eggplant. *Control:* Control by sprays in field. Reduce carrying temperatures to about 45 F. Move fruit promptly if decay is evident at market.

GARLIC

Blue Mold Rot (*Penicillium*)

Soft, spongy or powdery dry decay of cloves. Affected cloves finally break down completely into gray or tan powdery masses. *Control:* Prevent bruising. Keep garlic dry.

Waxy Breakdown

Yellow or amber, waxy translucent breakdown of outside cloves. *Control:* No control measures developed.

LETTUCE

Bacterial Soft Rot

Commonest cause of spoilage in transit and storage. This decay normally the controlling factor in determining the storage life of lettuce. (See Table 1, Note 1.)

Russet Spotting

Irregular spots, predominantly russet color, appearing anywhere on leaves, often nearer base of head. May be on ribs, veins, or leaf tissue between the veins. Affected tissues often infected by secondary organisms. May be found in the field but most appears to develop during transit and storage. *Control:* Rigid shipping point inspections, avoid shipping overmature heads, rapid precooling after harvest, transit temperatures near 32 F, and rapid marketing.

Tipburn

Dead, brown areas along edges and tips of inner leaves. Little or no development of tipburn in transit and storage. *Control:* Keep affected stock well cooled and market promptly after unloading to avoid secondary bacterial rots.

Watery Soft Rots (See Table 1, Note 4.)

MUSKMELONS

(Including Cantaloupe, Honey Dew, etc.)

Alternaria Rot

Irregular, circular, brownish spots, sometimes with concentric rings; later covered with black mold. Often found on melons that have been chilled. *Control:* Honey Dew melons should be stored at temperatures of 45 to 50 F. Store cantaloupes at 32 to 40 F for periods up to 10 days only. If cold melons are to be held at room temperature they should be so stacked that condensed moisture will evaporate readily. Market promptly.

Chilling Injury

Honey Dew and Honey Ball melons stored for 2 weeks or longer at temperature of 32 to 34 F sometimes show large, irregular, watersoaked, sticky areas in the rind. *Control:* Store these melons at 45 to 50 F.

Cladosporium Rot

Small black shallow spots later covered with velvety green mold. On cantaloupe extensive shallow area at stem-end or at points of contact of melons, that can be rubbed off easily. *Control:* Same control measures as for Alternaria rot.

Fusarium Rot

Brown areas on white melons; white or pink mold over indefinite spots on green melons. Affected tissue spongy, soft, with white or pink mold. *Control: Avoid mechanical injuries.* Reduce carrying temperatures to 45 F.

Phytophthora Rot

Brown, slightly sunken areas; later watersoaked and covered with wet, appressed, whitish mold. *Control:* Cull out affected fruits at packing. Reduce carrying temperatures to 45 F.

Rhizopus Soft Rot

Affected melon soft but not soupy and leaky as in similar decay on other vegetables. Coarse fungus strands may be demonstrated in decayed tissue. (See Table 1, Note 3.)

ONIONS

Ammonia Gas Discoloration

Exposure of onions to 1 percent ammonia in air for 24 hr causes surface of yellow onions to turn brown, red onions to deep metallic black, and white onions to greenish yellow. *Control:* Ventilate storage room as soon as possible after exposure.

Bacterial Soft Rot

This decay often affects one or more scales in the interior of the bulb. Decayed tissue more mushy than gray mold rot. (See Table 1, Note 1.)

Black Mold (*Aspergillus*)

Black powdery spore masses on outermost scale or between outer scales. *Control:* Maintain as low humidity and as low temperature as otherwise practicable, preferably 50 F or lower.

Breakdown

Gray, watersoaking of scales as in freezing injury, but only outer two or three affected. Entire scale may not be discolored; no opaque areas found. Sometimes found in field. *Control:* Control not known. Store onions at 32 F rather than 40 or 50 F.

Freezing Injury

Watersoaked, grayish yellow appearance of entire outer fleshy scales in slight freezing injury. All scales affected and flabby in severe injury. Opaque areas appear in affected scales. *Control:* Prevent exposure to 30 F and lower. Thaw frozen onions at 40 F.

Fusarium Bulb Rot

Semi-watery to dry decay progressing up the scales from the base. Decay usually covered with dense, low-lying white to pinkish mold. *Control:* Practice field sanitation. Do not store badly affected lots. Cull out infected bulbs in slightly affected lots. Refrigerate to 45 F or below.

Gray Mold Rot

Usually starts at neck, affecting all scales equally. Decay often pinkish. (See Table 1, Note 2.) *Control:* Cure onions thoroughly. Protect from rain. Store in dry cold storage at 32 F at 70 to 75 percent relative humidity.

Smudge

Black blotches or aggregations of minute black or dark green dots on outer drying scales of white onions. Under moist conditions sunken yellow spots develop on fleshy scales. *Control:* Protect from rain after harvest. Store at 32 F with 70 to 75 percent rh.

PARSLEY

Bacterial Soft Rot (See Table 1, Note 1.)

Watery Soft Rot (See Table 1, Note 4.)

PARSNIPS

Bacterial Soft Rot (See Table 1, Note 1.)

Canker (Htersonilia sp.)

Organism enters through fine rootlets and through injuries. Surface of infected parsnip first brown to reddish; later turning black, where a depressed canker is formed. *Control:* Follow recommended spray program. Crop rotation.

Gray Mold Rot (See Table 1, Note 2.)

Watery Soft Rot (See Table 1, Note 4.)

PEAS

Bacterial Soft Rot (See Table 1, Note 1.)

Gray Mold Rot (See Table 1, Note 2.)

Watery Soft Rot (See Table 1, Note 4.)

PEPPERS

Bacterial Soft Rot (See Table 1, Note 1.)

Gray Mold Rot (See Table 1, Note 2.)

Rhizopus Soft Rot (See Table 1, Note 2.)

Freezing Injury

Outer wall soft, flabby, watersoaked, dark green in color. Core and seeds turn brown with severe freezing. Sweet peppers freeze at about 30.5 F.

POTATOES

Bacterial Ring Rot

Yellow, soft, cheesy decay of thin layer of tissue in vascular ring. Outer ¼ in. of tuber and inner part may appear normal. *Control:* Use disease-free seed. Store tubers promptly at 36 to 40 F.

Bacterial Soft Rot (See Table 1, Note 1.)

Fusarium Rot

Brown to black, spongy, fairly dry; white or pink mold inside cavities in stored potatoes. *Control:* Avoid cutting and bruising during harvesting. Maintain well ventilated storage at 36 to 40 F.

Freezing Injury

If frozen solidly the tubers become soft, rubbery, and exude moisture. Slightly frozen tubers show darkening of vascular ring and dull gray to black areas in flesh. Potatoes freeze at about 29 F.

Late Blight (*Phytophthora*)

Reddish brown, granular discoloration of outer 1/16 to ¼ in. of tuber. Affected tissue fairly firm. *Control:* Keep dry. Store at 36 to 40 F. Market promptly.

Leak (*Phythium*)

Large metallic gray, moist, decayed area starting at end of tuber. Internal tissue granular, cream-colored at first, turning through reddish brown to inky black. *Control:* Prevent bruising. Refrigerate tubers to 36 to 40 F and keep dry.

Mahogany Browning

Reddish-brown patches or blotches in flesh of tubers. Chippewa and Katahdin varieties most susceptible. Differs from flesh discoloration caused by freezing in being reddish-brown instead of gray. *Control:* Store at 36 F or above, because lower temperatures cause the discoloration.

Net Necrosis

Dark brown netting in outer flesh of tuber due to killing of vasculars. Most prominent at stem-end but extends well toward bud end. Increases during storage. *Control:* Plant only healthy seed. Reduce storage temperature promptly to 36 to 40 F because infected tubers show symptoms earlier at higher temperatures.

Scald and Surface Discoloration

On early potatoes appears as sunken, injured areas, later turning black and sticky. Followed by bacterial rots. *Control:* Reduce exposure to sun and wind as much as possible after digging. Move promptly to market. Maintain as cool temperatures as possible.

Southern Bacterial Wilt

Moist, sticky exudation from vascular ring when tuber is cut. Sometimes advanced mushy decay in center of tuber. *Control:* Avoid shipping infected tubers if possible. Market promptly.

Stem-End Browning

Dark brown to black tissue, solid or in streaks, extending from 1/16 to 1 in. into the flesh from the stem-end. Develops during storage. *Control:* Reduce storage temperature promptly to 36 to 40 F. Higher temperatures allow rapid development in susceptible lots.

Tuber Rot (*Alternaria*)

Dark brown, slightly sunken, shallow, irregularly shaped lesions 1/16 to 1 in. in diameter. Develops during storage. *Control:* Keep tubers away from blighted vines as much as possible at harvest time. If tubers are damp, inspect frequently during storage.

RUTABAGAS

Gray Mold Rot (See Table 1, Note 2.)

Freezing Injury

Rare because the commodity can stand slight freezing without injury. Severe freezing causes watersoaking and light browning of flesh, odor of mustard, and fermentation. *Control:* Prevent repeated slight freezing or severe freezing.

SPINACH

Bacterial Soft Rot (See Table 1, Note 1.)

Downy Mildew (*Peronospora*)

Field disease commonly found on market as pale yellow, irregular areas in leaves. Downy gray mold is present on the lower sur-