

frost, yet in the main the wheat crops had suffered from the effects of rust. *Puccinia graminis* is a form of plant-life which is classed with the ordinary field mushroom as a fungus. Like the mushroom, it is unable to derive its sustenance direct from the soil. While the mushroom is large in size and lives upon decaying animal and vegetable matter deposited in the soil, *Puccinia* is so small as to be seen in detail only with the aid of a microscope. It nourishes itself upon the food substances on their way from the roots to the seed-heads of wheat-plants. This misappropriation by

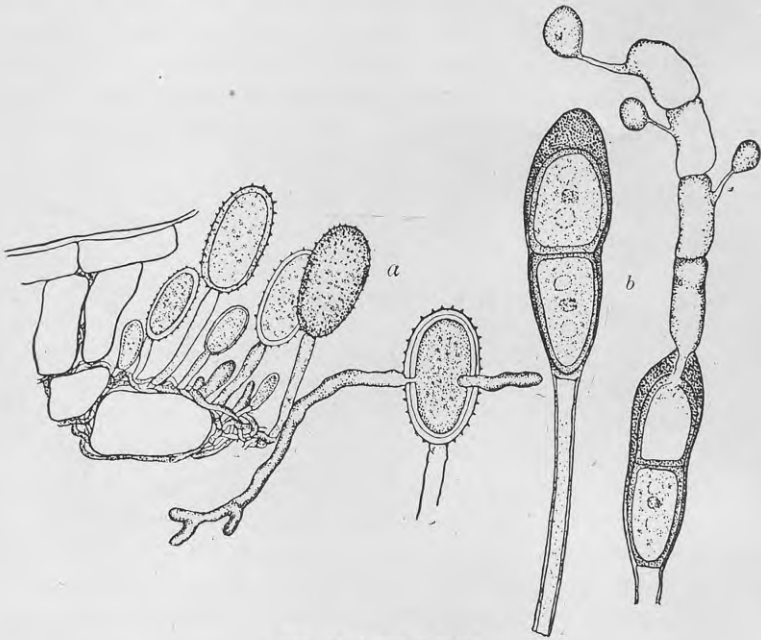


FIG. I. WHEAT-RUST.

(a) Summer spores (uredospores), one of which has germinated; (b) winter spores (teleutospores), one of which has germinated and has produced three basidiospores. Very highly magnified.

[After Duggar.]

the fungus of the food materials intended for the development of wheat-grains readily accounts for the undeveloped and shrunken appearance of the grains of affected plants.

To the naked eye one of the first signs that a crop is affected is the appearance on the stems of a fine reddish powder which comes off and sticks to the clothes or blows about in the wind. Under the microscope this reddish powder is seen to consist of innumerable red globes borne in very narrow slits or crack-like ruptures (sori) in the skin or epidermis of wheat stems and leaves.