

Perspective

It Takes a Lot of Running to Keep from Falling Back

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SUPPOSE ALL THE PEOPLE of the United States left suddenly, as the cliff-dwelling Indians left Mesa Verde many years ago, and returned a hundred years later. How many of our modern cultivated plants and animals would they find? Perhaps a few straggly specimens here and there. But competition with wild plants and animals, diseases, and insects would have destroyed most of the best stocks.

Of course we cannot imagine such a mass exodus, but the thought does point up a fact that we too often overlook: We must do a lot of research just to maintain the gains made on farms in the past 50 years.

Stem rust disease of cereals is a good example. Early plant breeders were puzzled to see varieties that had stood up against stem rust for several years suddenly succumb. Later it was demonstrated that there are many races of stem rust. Breeders then knew they were fighting a whole host of organisms, all capable of causing stem rust.

Right now, breeders in the U. S. Department of Agriculture and State experiment stations are hard at work developing wheat varieties resistant to race 15B, which showed up as a major threat for the first time in 1950. This race can attack all winter and spring wheats now in commercial production. Some of the stocks being used as a source of resistance to 15B are susceptible to certain races of stem rust that were prevalent more than a decade ago. This means we must speed up our efforts to meet this additional threat. If we succeed, we will merely be holding our own.

The existence of immunologically distinct types of virus and variants within types has been definitely established. The six types of foot-and-mouth disease virus are immunologically distinct. An animal recovered from one type, say type A, may be resistant to reinfection with type A, but is readily infected with the other types. Three distinct types of equine encephalomyelitis virus

have been found, at least four of vesicular exanthema of swine, two of vesicular stomatitis. Each type requires its own antiserum.

Our race with insects has also been touch and go. When DDT came into use, it seemed for a while that we had spelled the doom of some of our worst insect enemies. In recent years, however, we have found that flies, mosquitoes, and some other insects are developing resistance to DDT. This means our whole approach to insect control with DDT and other new insecticides must be modified to take the insect resistance factor into consideration.

Our basic resource for all agriculture is the soil, and here, too, we have to work hard to hold our own. Until very recently we haven't even been holding our own.

Cultivation of soils usually results in loss of organic matter, and associated with this is general deterioration. Because of declining soil fertility during the half-century prior to 1930, the yields of our principal crops remained practically the same. This was true in spite of improvements such as drainage and irrigation, fertilizers, machinery, better crop varieties, and better insect, disease, and weed control. On large areas, soil fertility is still declining. On other areas we are slowing down soil deterioration, and on still others we have started on the upgrade.

And so the race goes on. We forge ahead here, drop back there. When we consider agriculture as a whole, we know we have gone forward. But as we face the need for more products from the same land with fewer farm workers, we must recognize that our present knowledge and methods will not suffice. We will have to dig deeper into the basic laws of nature. In short, we will have to work harder. As the Queen told Alice in Wonderland: "It takes all the running you can do to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that."