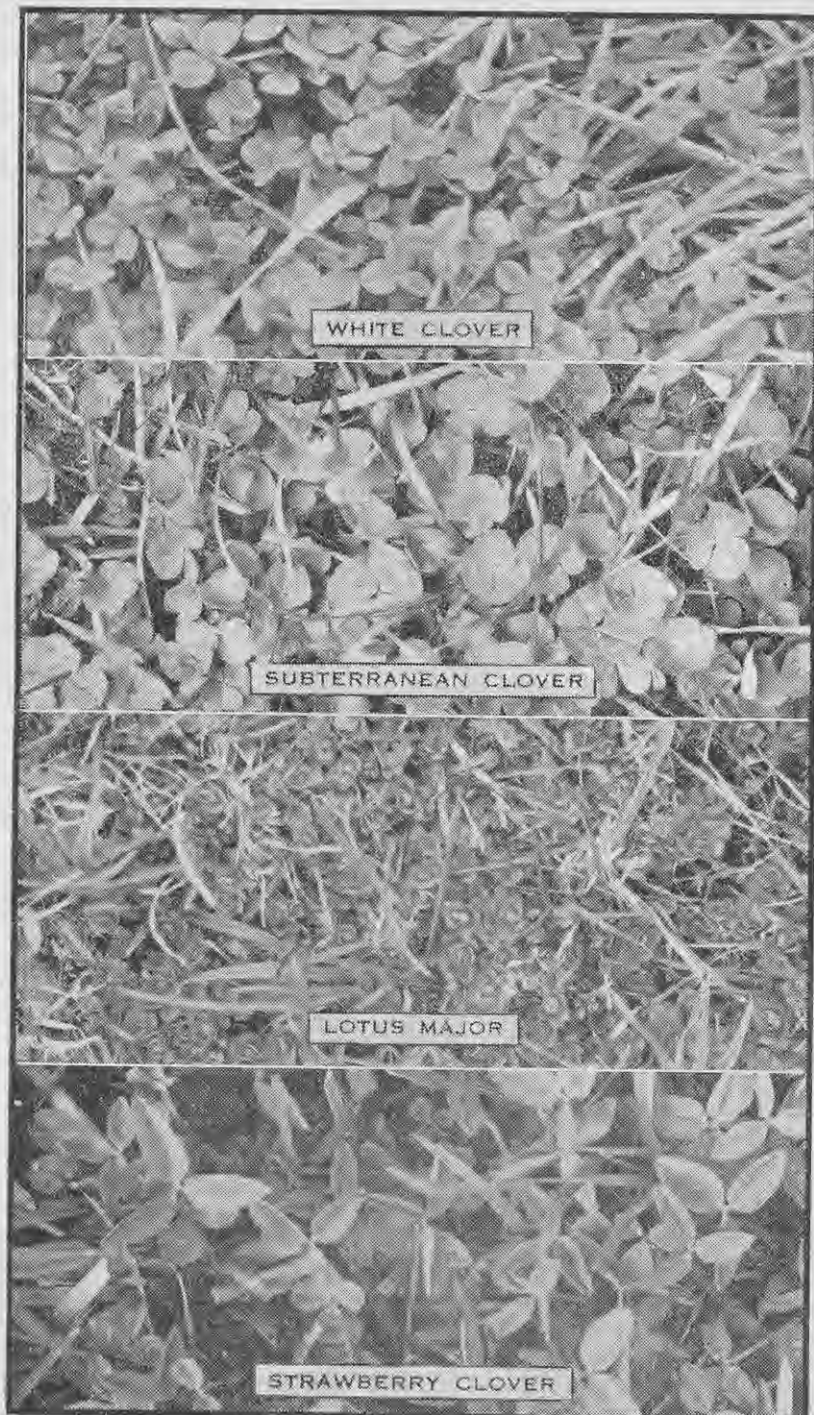


## LEGUMES AND FERTILITY



Land improvement depends largely on the use and improvement of the growth of legumes. White clover is the fertility builder on pastoral land which does not suffer unduly from summer dryness; on land which is unduly dry in summer subterranean clover takes its place. *Lotus major* is useful on moist land in the warmer districts where the soil phosphate level is below that required for white clover. Strawberry clover has its place on rich moist land (particularly reclaimed saline flats) which is too moist for white clover.

Works imposed by authority of Acts of Parliament or fostered by subsidies are not as likely to succeed as those arising spontaneously from the occupiers or induced from a sense of gaining ultimate well-being for themselves and their country. Coercion, where it may be necessary, should be a social sanction imposed by the decision of local communities.

The occupiers of the land are the only people who can maintain or improve soil fertility, and they will embark on improvement practices if results are tangible. If the results of their first efforts are successful, other practices or works which may be necessary for soil conservation are likely to be undertaken, perhaps not so much for further tangible benefits as for the protection of the improved asset given by the primary works.

### Soil Fertility

Composition and situation are the factors determining the natural fertility of soils, and each is capable of infinite variety. Parent rock and method of formation, rainfall and temperature, age and slope, vegetation and animals all contribute to natural fertility which Man may exploit, conserve, or improve through the management methods he adopts. Thus, though the fertility factors concerned in even one soil are of infinite complexity, the general farming practices which exploit, conserve, or improve fertility are capable of fairly precise definition.

Apart from the modern application of fertilisers and the ages-old use of animal manures and lime, fertility maintenance in the history of farming has really rested on two major practices—the fallow and the use of legumes. The use of both is very old, for Pliny commenting on Virgil noted "... that alternate fallows should be made and that the land should rest entirely every second year. And this is indeed both true and profitable provided a man have land enough to give the soil repose. But how if his extent be not sufficient? Let him sow next year's wheat on the field where he has just gathered his beans, vetches, or lupins or such other crop as enriches the land. For it is indeed worth notice that some crops are sown for no other purpose but as food for others, a poor practice in my estimation." The real advancement in recent years has been the development of fertility-building and highly-productive pastures containing clovers and allied plants through the use of fertiliser and lime. Mixed pastures of grasses and clovers have lessened the necessity for annual legume crops for soil-fertility maintenance.

Wherever people are few and land abundant men rely on the fertility of virgin soils; they take natural pastures, forest, or scrub land, graze or burn and cultivate the land until it shows signs of exhaustion, and then move on, allowing the land to regenerate grass, forest, or scrub. Nomadic peoples, ancient and modern, primitive and highly civilised, have followed this method. The nineteenth- and twentieth-century practices in the New World were possibly more destructive of fertility than those of primitive nomads, for both cropping and grazing were more intense and sustained.