

Sometimes grape-must will refuse to ferment. The yeast germ is either not present or it lacks vigor. California wine-makers often discuss the trouble of "stuck wines," which term is applied to grape musts which cease fermenting before the sugar of the grape is decomposed. I have had no experience with this phenomenon in the East. Unfortunately the fungi of the vine, the mildews, &c., are also ferments which split up sugar into alcohol and carbonic acid gas. Of seasons when the vine fungi have been peculiarly active I have noticed that vinous fermentations are remarkably violent. In 1877, I fermented, in one cask, 2,600 gallons grape-must with a large addition of sugar, continuously for twelve months, during which the active fermentation never ceased, even with a cellar temperature of 46° F. Finally, after several years of fermentation, it developed into a fine "port wine." This extraordinary action of this cask of wine appeared due to intervention of *Peronospora viticola*, which was that year prevalent and vigorous.

On the other hand, I have noticed that when grapes had been preserved from the fungi of the vine by enclosing the clusters in paper bags, the juice of them is slow to ferment! This enclosure seems to exclude even the "saccharomyces"—the natural vinous ferment germ.

Of course the commercial wine-maker is not bothered with solution of these problems of fermentation. He cuts the knot of difficulty by forcing results. If wine be too sweet, he doses it with acid; if too sour, he cures this defect with a "sali" if too strong, he irrigates it; if not strong enough, "fortifies" it; and somehow—anyhow—compounds a beverage called "wine," which is palatable and potable for those heedless of what they drink.

A. W. P.

WESTERN ILLINOIS.

FERTILIZERS FOR WHEAT—SEEDING TO GRAIN—CAUSE OF POOR OAT CROP.

Our wheat is very poor. For once the threshing machine has verified the predictions of the pessimist. While the quality of the grain is all that could be desired, no one has been agreeably surprised by the quantity, and some found their crop less than they had anticipated after it was harvested. The highest yield in the county of which I have heard was 38 bushels per acre from forty acres. This wheat was grown on a heavy growth of clover turned under last fall. Two neighbors of the fortunate farmer have informed me that in the future they will have a clover sod to turn under for wheat; that this field of wheat proved to their satisfaction that to sow wheat on a clover sod is the proper thing to do. I fear that they are doomed to disappointment. One swallow does not make a summer. While winter wheat on a clover sod has made a superior yield in this case, and in some other that have come under my observation, in at least three times as many cases it has been shown that clover is not a good fertilizer for wheat on our soils. There are several good reasons for this, also. First, a heavy growth of clover plowed under in the fall prevents the thorough compacting of the seed-bed. In ordinary seasons this is a serious matter. Last winter it was not, for we had no weather severe enough to heave out the wheat in even a loose seed bed. But last winter was exceptional, and far oftener than otherwise the clover, by preventing the compaction of the seed bed, will be an evil, though in other directions it may be a benefit. (1)

(1) Quite right. The heavy rain of last fall (1889), acted as a roller, and jammed down the land. A clover ley after two mowings will give a better crop of wheat than if the second is ploughed in.

A. R. J. F.

GENERAL REMARKS.

PHOSPHATES.

Few persons, not directly interested, are aware of the importance of phosphates in agriculture and the magnitude of the industry which produces over three quarters of a million tons of the manufactured article annually. Canadian deposits, now perhaps the principal as well as most valuable source of supply by reason of the richness of the mineral, are a practical monopoly, a colossal syndicate having been formed to control the market. (1) Under these circumstances other possible sources of supply are being investigated. The phosphatic deposits of Cambridgeshire and Bedfordshire are well known, but the geological configuration of another locality in the U. K. also suggests the presence of apatite, and as a matter of fact vast deposits there exist sufficient to supply British requirements. Unfortunately, however, the rock is so impregnated with iron as to render it commercially valueless, the presence of iron being fatal to its conversion into superphosphate. Here then is a glorious opportunity for science to discover the means of eliminating the iron, so that these vast stores of unproductive wealth may be turned to account, and British agriculture rendered independent of foreign supplies.—*Ag. Gazette.*

A SUCCESSFUL DAIRY FARMER.

I have been favoured by a well-known judge of cheese, with some information which appears to me to be sufficiently important to remark upon. My informant tells me that Mr. Henry Lea, a farmer in his neighbourhood, last year made over eleven tons of cheese from forty cows, the herd averaging 5 cwt. 2 qrs. 2 lbs. As each hundredweight was 121 lbs., it is apparent that each animal yielded 670 lbs. of cheese. (2) It may be supposed that a good farmer like Mr. Lea would make a good cheese, but the prices are not what they once were. If, however, he secured no more than 65s per cwt., his gross return for cheese alone would be nearly £18. To this would have to be added at least £1 for whey, probably £2 or more for the calf, something for the whey butter, which even in the best managed cheese dairies is necessarily obtained, and, as I have pointed out, a considerable item for winter milk. This is dairy farming to advantage, even in these days when Denmark and Normandy are in everybody's mouth. Making every possible allowance for low prices and for a surplus yield, respecting which I have no information, Mr. Lea's return from his forty cows cannot be less than £800, in addition to the calves they have dropped.

MANCHESTER GUARDIAN.

AUTUMN FEEDING.

Those who own milking cattle will be wise to remember (says Professor Long) that good sound autumn feeding enables an animal to go through the winter with considerably less effort and loss of condition than is observable in stock which get nothing but what they find in the fields. Three pounds of cotton cake daily will be a great help, and the outlay is to a large extent returned in the future crop should the animal be grazing upon the aftermath of the meadows. At the present time cake is by no means high in price, but it is likely to be higher, and farmers who consume large quantities, and who have not yet purchased, would do well to ob-

(1) Fortunately the syndicate tumbled to pieces soon after this article was published.

A. R. J. F.

(2) A marvellous yield. Our own splendid Gloucestershire grasslands only cause a pro luct of about 450 lbs. of cheese per cow.