

heavier yields after the mowing-machine than after sheep, while with decidedly unpalatable species the reverse is the case. The lawnmower therefore produces entirely different effects to those occasioned by grazing with sheep, and although valuable as an experimental method of defoliation is by no means the equivalent of sheep." It should be noted that these remarks apply to a system of "mowing only" as opposed to "grazing only."

In connection with the experiment started on the Marton Area in 1928, which will be discussed later, a small area was fenced off and the whole of the herbage removed with the mower, on dates corresponding with the cutting of the experimental plots, merely to observe the effect of continuous mowing on the sward as compared with the effect of the system adopted on the experiment itself. Fig. 1 is a photograph taken in January, 1930, after seventeen months of continuous mowing. On the manured portion white clover is dominant, whereas on the unmanured portion catsear, *Agrostis* sp., and sweet vernal are the main species.

Fig. 2 shows a manured portion of the actual plots of the experiment, taken on the same date and not more than ten yards from the sward shown in Fig. 1. Catsear and rib-grass, although fairly prominent, are less in evidence than on the plots shown in Fig. 1, and grasses are more abundant.

Fig. 3 illustrates a sward which point-analysed (by Mr. E. A. Madden) in August, 1929, showed 53 points of rye-grass, 30 of white clover among small amounts of other species, and 0.9 points of catsear, per 100 points. After five months under continuous mowing (eleven cuts were taken) white clover was dominant, and catsear and rib-grass took on the growth shown on the left and right sides of the photograph respectively.

Fig. 4 shows an adjoining plot of the same pasture (the analysis at the commencement was practically identical with that stated for Fig. 3) under the system adopted for most of the work. These plots had five mowings and five grazings during the same period in which the plots in Fig. 3 were mown eleven times. Catsear, although present, took on the growth-form shown at the point of the pencil. Sheep had been eating the leaves of this plant. This photo was taken on the same day as Fig. 3, but growth was a little more advanced. Rye-grass is much more abundant and clover less abundant than on plots shown in Fig. 3.

Sufficient evidence has been advanced to indicate that, so far as its effect on the botanical composition of pasture is concerned, continuous mowing induces conditions entirely different from those occurring on a grazed pasture. Since the object of the present series of trials is to investigate the effect of different treatments on a grazed sward over a period of years, it is evident that a system of continuous mowing is unsatisfactory.

(2) *Removal of Lime, Phosphate, Potash, and Nitrogen under a System of Continuous Mowing.*—Orr⁽¹⁾ gives for the average of forty-eight pastures the following as approximate percentages of the dry matter: Lime (CaO), 1.1; phosphoric anhydride, 0.75; potassic oxide, 3.0; nitrogen, 3.0. Assuming 5,000 lb. of dry matter is produced by a pasture during a period of one year (the figure is low for good pastures), the following quantities of the foregoing materials would be