

of the different grasses in common use, something more than this is needed, and here Agricultural Chemistry comes in to assist practical knowledge, and give a true solution to what has, heretofore, been in a great measure guess work. The composition of the same grass varies when grown in different soils; and the same plant analyzed when going into flower and when going out of flower, will be found to present as wide differences as though they were a different species of plants. I have only referred to the direct gains derivable from this increase of the grasses. There are indirect ones which are worthy of being taken into consideration.

The immense amount of manure which must result from the consumption of this great augmentation of the herbage grasses must wonderfully increase the production of the cereals, and thus add largely to our income. The influence of grass culture on the growth of cereals is strikingly exemplified by the following comparison of agricultural statistics of France and England. France has fifty-three per cent. of its cultivated area under cereal cultivation, while England has but twenty-five per cent. I was much surprised to find, upon investigation, that notwithstanding this great disparity between the areas of the grain land in the two countries, England produces five and one-ninth bushels of grain for every individual member of her population, while France only produces five and one-half bushels for every individual of hers. Thus with less than half the proportional area under cultivation, England produces within seven-eighths of a bushel per head of what France does, and is accomplished solely in consequence of the manure produced by her grass lands. Every acre of English grain receives the manure from three acres of grass land, while in France the manure from each acre of grass land is spread over two and one-half acres of grain land, or in other words, one acre of grain land in England gets fifteen times more manure than an acre of grain land in France.

This statement tells the whole story, and would lead one to infer that a like increase of manure would produce a corresponding increase of crops with us. There are other incidental profits which would arise from the increase of crops; but from the length of these remarks I must leave them to some future time for consideration, or you to think out for yourselves at your leisure.

There is a tendency among the rising generation to desert the rural district with the view of shunning manual labor, which can only be checked by making the country more attractive. The great central pillar upon which our national security and prosperity rests is agriculture, our pride and hope, the educated farmer, and there is no reason why we should not receive all the encouragement and aid his value demands. His interests should be suitably represented at the seat of Government. We want a bureau of agriculture that will do something more than merely gather statistics in the way of figures. Much more might be done than is done in this quarter to care for this princely domain, to develop its resources and prevent its exhaustion by promoting knowledge, stimulating industry by employing the highest intelligence to develop and render familiar the science of agriculture. It is necessary though that the actual worker of the soil become enlightened, that he be to a certain extent educated before the instructions of the learned will be received or scientific investigations made profitable. Ignorance is nervously fearful of innovation, and there ever is, until knowledge enlightens strong opposition to everything new. Hence there was a time when every improvement in agriculture was regarded with a certain amount of contempt, and book farming was set down in the scale of absurdities. It was almost dangerous to one's good name and standing to make experiments or deviate from the time-honored routine of the neighborhood, while all science was impertinent and vain, if not wickedly presumptuous. The moon with many was the presiding goddess of seed