

ning, in endeavouring, as far as I possibly can, to elucidate the science of agriculture with reference to the application of chemistry to its development. I am not come down to you with a vast amount of chemical apparatus; I have not brought here a prodigious number of curious things of which you might have wondered what was the use. I come to you this evening with the language of plain common sense; and with the operations which you are continually performing on your farms as the basis of my arguments, I shall see if I cannot, by applying to them the rules of plain common sense, elucidate the subject, and secure to you a greater knowledge of the science of agriculture than you already possess. Before doing this, however, I must make one or two observations. And gentlemen, I must, in fact, quarrel with you, because you arrogate to yourselves alone, what I think you ought not to claim for yourselves, alone—the title of *practical men*. “We, we, we,” you say, “are the practical men,” as if there were no other practical men in the kingdom besides yourselves, and as if no one else understood the nature of things. Now, I mean to contend that the title “practical,” does not belong to the farmer alone; and I have certainly some doubt whether it ought to be applied to the farmer at all, in its full signification. I will take, for example, the case of Mr. Tomkins, who is a capital farmer. He farms his land well; he keeps stock, and grows turnips, and does everything in the best manner. Now, as a poor student in science, I want to gain from this gentlemen some useful practical information. With this object in view, I say to Mr. Tomkins. “Pray, what have you got in your soil—what are its properties?” He replies that it is a sandy soil, a loamy soil, or a clay soil. “Yes; but what have you got in the one and what in the other?” “I don’t know; I have not gone so far as that yet.” I then ask, “What have you got in your manure?” and Mr. Tomkins, good, easy, practical man as he is, says, “I cannot tell you.” If I ask him what his crops take out of the land, again he declares that he cannot answer my question; he knows that they take away something; he knows that if he sows wheat, barley, or anything else, something is he cannot determine. Lastly, if I ask Mr. Tomkins what is in the air and what in the water, he is still obliged to confess that he does not know. Now, gentlemen, I appeal to you whether the term practical, in its largest sense, will apply to Mr. Tomkins, while he actually knows nothing whatever of those things on which the success of the agriculturist, peculiarly depends. I grant you that Mr. Tomkins looks at his crops, manures, and soils, in the whole, and that he has got some general idea of them as a whole; but then he never seriously considers what this whole is composed of; and what I propose to do is to extend his knowledge

a little further; so that, instead of his attention being confined to those generalities on which it has hitherto been fixed, he should be made acquainted with everything in the soil, in the crops, in the manure, in the air, and in the water (Hear, hear). Now, I ask you, gentlemen, as practical men, to say whether you consider that this knowledge would not be worth having, and whether it would not be well for every man, as far as it may be in his power, to seek to attain such knowledge. Well, now, having thus prefaced my subject, I shall at once commence the consideration of the manure made on the land; and I shall afterwards offer a few observations on the rotation of crops and the nature of those substances which are offered to the farmer under the name of artificial manure. And let me here observe that I shall be very happy, at the close of the lecture, to hear any remarks, or to answer any questions which may occur to any one present, having reference to anything which I may have said; for some of the things which I intend to present to your notice may be so new, and so contrary to ideas previously impressed on your minds, that you may doubt the truth of my statements; and the best way to settle any question of that kind is to argue the point at the close of the lecture (Hear, hear). Let us begin with the far-famed farm-yard dung, which is supposed to be so superior to all other things. It is that which grows the crops, and, which, in the estimation of the farmer, is not surpassed by any possible combination of substances. Now, what is this farm-yard dung? It is formed by acting on vegetable matter in some way or other. You either take a quantity of vegetable matter, and pass it through the stomachs of animals, where it is acted upon and the refuse passed out, or you put vegetable matter—as straw, or litter—in the yards, and allow the excrements of animals to be mingled with it, and a slow decomposition to take place. The whole being commingled and mixed together is known by the name of farm-yard dung. Now a very little consideration will show that the whole of the material which is found by you, gentlemen, to be practically so useful on the farm is merely derived from vegetables; so that you are, in fact, applying the remains and refuse of vegetables to renovate the land. This is the whole secret of a farm-yard dung; it is vegetable matter, which, when partially decomposed, is re-applied to the land, where it forms vegetables over again; so that you are continually working as it were in a circle. Thus the same particles of matter imported on the farm perhaps in the shape of oil-cake, first reappear in the shape of a turnip, again as barley, now as beet-root, now as wheat—the cycle of changes continues until the identical particles are exported from the land as beef or mutton, or as grain. Now I hope I shall be able to offer one or two ideas with respect to the origin and nature of