able to raise the amount of his produce to 85 bushels of oats per acre on the extent of land amounting to 100 acres: (applause). I take this as my stand. You may say that this is the limit to which a man may go. For my part, however, I do not think it is, but that I am entitled to say to you that by the application of similar means to similar land the same results will follow, (applause). And then, again, gentlemen, if from these districts—if from these coal measures— and I allude to these coal measures because you have them in abundance in this neighbourhood—if, I say, your neighbours, unless the value of that increase very them in abundance in this neighbourhood—if, I say, your neighbours, unless the value of that increase very them in abundance in this neighbourhood—if, I say, your neighbours, unless the value of that increase very them in abundance in this neighbourhood—if, I say, your neighbours, unless the value of that increase very them in abundance in this neighbourhood. them in abundance in this neighbourhood—if, I say, your neighbours, unless the value of that increase ve-in this country, you find this to be the case, I would ry considerably exceeds the value of what you apply carry you still furthur north, and I would assume that to the land; and, therefore, if I leave the word out, I some of you know the country of East Ross-shire, beg you to rememder that is my opinion of improve-and some, I doubt not have skirted the castern coasts ment. There are two means of improving the land, of Sutherlandshire, and beheld the large crops of wheat and turnips to be found there. Now if I had had a geological map, as I intended to have hadhere, I could the application of manures. Draining, and the first have shown you various districts, in different parts of thing mentioned, will come more particularly under the island, where the geological character of the soil are identical with those of Ross-shire and Sutherland-shire. And if you and, in South Wales, land of a si-milar character to that which eats up all the dung, and drives up all the water given to it and on the application of manures (Hear). Many of you per-milar character to that which eats up all the dung, and drives up all the water given to it and on the application of manures (Hear). Many of you per-definite water with the set of the soil of the application of manures (Hear). milar character to that which eats up all the dung, milar character to that which eats up all the dung, and drinks up all the water given to it, and on which equal crops might be grown, to those grown further north, but which in Wales produce much less then, I say, I am entitled to believe that, if equal skill was applied, equal results would follow (applausc. But I think, as a scientific man, I am bound to put to myself a furthur question—I am bound to put to thether we may not justly and fairly compare unlike soils to like soils, compare good and natural fertile soils, with soils naturally unfertile; and you are enti-a state of things at least that the naturally unfertile soils shall grow as much as the naturally fortile soils thear). Now, without saying it is impossible to do so with this or that peculiar soil, there is one thing which I can justly and fairly assume from the progress of scientific skill, that there has been, and can be great improvements in poor lands (applause). I am as unwilling as any sceptic unwilling to be sanguine in my expressions; but I do think that practical men. in my expressions, but I do think that practical men is answered just by telling what those plants require are justified in asking from science whether such an from the soil, and secondly of what manures consist. improvement is one which can be ultimately accom. The first is easily answered. If you burn a piece of plished? (Hear). And I do say, that I cannot see my wood, it burns away, but all is not consumed. A way to the result that the scientific man is justified in small quantity remains behind. And that is the case saying that this is an object which the practical man, with all the vegetables you produce—the recidum be-may not justly expect from the scientific man: at the ing in some cases more, in others less. In the burn-same time I must allow that for such a result we must ing of all vegetable and animal substance you have allow time for the further development of science and this portion left behind, and this is called ash or the how block of block of such a result we must in portion left behind, and this is called ash or the how block of block of such a result we must in portion of plants while the part which die knowledge (cheers). I allude to the progress of sound inorganic portion of plants, whilst the part which disknowledge and practical experience, because I have appeared was the organic part. The inorganic parts lately found published, in various periodicals, a rela-differed in quantity in various plants. (Mr. J. here tion of various experiments—and experiments are va-referred to the tables placed on the wall to illustrate luable by whomsoever made, but more especially so the difference in the quantity of ashes, and continued.) when made by skilful men. Among those were some Now let me draw your attention for a moment to the made by Mr. Vernon Harcourt in which he had ap-organic parts which constitute the largest portion of plied, for the growth of turnips, bones and guano to parts. I can best illustrate this to you by taking a certain soils. By the application of boues he procu-red 30 tons per acre: by the use of guano, he got wash this dough, and poor the water with which I so tons, and by the use of both together he procured no more than the same quantity; and from this he in-the water will pass through into the glass of a milky ferred that he had reached the utnost limits to which human skill could go (Heat, hear). Now these ex-periments are excellent. They are so for materially contributing to the progress of knowledge; but the through and which is totally different from the starch conclusion I believe to be hasty; for I am quite sure and also different from the dough itself-this substance that the practice of other men would have produced is what is called "gluten." You must apply what

exposed to the east winds from the Frith of Forth, that the land will be made to yield larger crops, the and yet in that District we find that a farmer has been able to raise the amount of his produce to 85 bushels, to be brought about? There are two ways in which still greater crops (cheers). Suppose, with mysel; you see here to every other plant and part of plants.

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