

from a county to the whole of England, and I will now apply the same reasoning from England to the world. Gentlemen, the foreigner is placed in different circumstances to ourselves; he has different ideas, different requirements and necessities. 'Necessity is the mother of invention;' and foreigners are, perhaps, more of an inventive turn than ourselves. The result may prove that what owes its existence to these causes may eventually be so modified and adapted as to meet some want of our own. Indeed, I may point to the reaping machine as illustrating this. It is true that long before the year 1851, reaping machines had been invented, but their existence was little known. *It was not until America exhibited those of M Cormick and Hussey in the Great Exhibition of 1851, that the attention of our English manufacturers was seriously turned to this description of implement,* and thus a machine called into existence to meet a foreign want has been adapted and improved so as to meet what I believe to be a want of our own. But I need not weary you with further illustrations; I believe I have said enough to show that the Great National Exhibition of 1862 may be fraught with important results to agriculture, and I believe that I am at the same time shown that our society has entered upon an important era in its existence."

### Lines of Wealth hidden under the Chalk Stratum.

Sir Roderick Murchison has started a subject for the Wayland Agricultural Meeting, which we may well occupy the attention of the agriculturist.

Lord Walsingham, who occupied the chair, in proposing Sir Roderick's health, said: perhaps would be too much to expect from a gentleman who had anticipated the finding of gold in California, that he should teach them how to find gold in the sands of Norfolk: but he would venture to say that the due and prudent application of science to the practice of agriculture was a less sure way of finding gold than digging where it has long lain hidden in the bowels of the earth. If Sir Roderick were kind enough to make them an address on this occasion, as he had no doubt he would, he might, perhaps, be willing to tell them how important it was to farmers that they should consult some one of the geology and mineralogy of the land on which they lived, and ascertain how the surface was altered by the character of the geological stratum beneath it. Sir Roderick might perhaps be willing to tell him why it was that among the sands of Norfolk they found those deposits of clay and marl which were used so largely in fertilizing the soil. But without anticipating what Sir Roderick might be disposed to say, he would only further add that if he spoke of that which he knew he must

speak to them of things of which they knew little or nothing, and it was quite impossible that Sir Roderick could address them without giving them much important and valuable information.

Sir Roderick at once took up the gauntlet, and thus replied:—With regard to the discovery of what might exist under the soil, to which his noble friend the President had adverted, the time was when Dr. Buckland, his (Sir Roderick's) distinguished and illustrious predecessor, had said the day would come, and so he told the late Sir Robert Peel, when there would be found under the soil phosphatic substances that would greatly enrich the farmer. Dr. Buckland was actually laughed at and actually scorned for having expressed such an opinion, but they had lived to see the day when, in the adjoining county of Cambridge, the substratum was laid open to the day, and the lands of that and the adjacent counties were enriched to a large extent by the exhumation of those very phosphatic substances that formerly were deemed as nothing to the farmer, and only regarded by geologists as curiosities. They now knew the value of this discovery, and he only wished he could further point at what depth underneath the Norfolk chalk this substratum might be found. Let them hope that when the geological survey came here, they would find some corner in Norfolk where the chalk thinned away, and where this stratum that lay immediately under it, cropped out in great abundance. They would then see some spirited nobleman, like Lord Walsingham, sinking a shaft to bring it out and enrich the land with a material that was equal to any guano the farmers now paid so high a price for. These were the chief advantages which the geologists, the underground men, could communicate to the farmer. The whole system of drainage depended on a knowledge of the subsoil. How should geologists know anything of their trade if they could not say where a well should or should not be sunk? How should they know anything of the strata, or be considered as anything in their profession, if they were not able to tell the farmer how to drain his lands? These were the points on which geologists were connected with agriculture, and he must say that they would never have arrived at half the knowledge they possessed, by going over the surface of the soil and into the ravines that here and there existed, were it not for the kindness and hospitality by which they had been received by the British farmers. To them the geologists owed a deep debt of gratitude wherever they went, and all the surveyors under his direction—for he was at the present moment director of the geological survey of the British Isles—were under the deepest obligations to British proprietors and farmers, not only for the kind manner in which they were received, but also for the way in which they were instructed, in the nature of the soil they examined. He could not exactly answer the question that had been propounded by