phere. During this interval they generally grew tur- terials which the soil might want, There were two nips or a plant requiring little more than a fourth the other operations in this class, the use of common salt quantity of phosphates required by a corn crop, and and irrigation. The latter process was of three kinds, which, taking up no silica, and but little lime or magnesia, only removed from the soil or the manure potash manuring. The former, or irrigation by pure water, or soda. If they then caused sheep to eat the turnips played the same part, but more actively, as a fallow; off the land, the sheep restored in their excrements all and for this reason, the land should be well drained the potash which the turnips contained and probably a that the water might percolate the soil, and be renewed portion of the small amount of phosphates which they by water from which the air had not been excluded. had taken up. During the growth of this plant the soil had been further disintegrating, and thus an increased quantity of silicate of potash became available their effects were too well known to require especial to the corn crop, for which an abundance was required. notice. Hitherto he had considered only those opera-If they then grew corn they found the soil but little tions which made the soil itself available for plants, exhausted by the previous plant; but as soon as they removed their cereal crop they removed at the same time from each acre about 70 lbs. of alkalies and 60 lbs. of phosphates. The corn having thus exhausted the rally deficient were the phosphates, especially in lands soluble silica and phosphates, they grew a green plant, long devoted to arable culture. Now, how must they and having before had two which required a considerable amount of potash they now resorted to one containing lime (artificial grasses), and by the lime consumed, the action of the air upon the soil again liberated enough silica and phosphates to grow a new crop of corn; barley, when there was lime in the land; or oats and wheat when lime was deficient. This was the again to the great magazine of food, the atmosphere, general system, though, of course, it varied with loca-lities and circumstances. Mr. J. C. Morton had obligingly furnished him with a table of the rotation of crops on particular geological formations, the general result of which was, that in clays or soils rich in potash the crops intermediate with the corn were plants and restored to the soil, it must be preserved in its taking much potash, but little silica; while the system unimpaired state; for the stem and other parts on the calcareous soils was to alternate them with containing much valuable silica of potash was also plants more fond of lime than of potash. When this restored to the soil, either by not removing it class of soils was very poor in silicate of potash, they from the field or after it had served as litter for class of soils was very poor in silicate of potash, they found sainfoin much cultivated and preferred to clover, as it contained only one-half of the amount of silica every year more than 6,000 lbs. of alumina, more and a small proportion only of potash. From this it than 3,000 lbs. of silica, lime, and magnesia, and would be perceived that the first object of rotation was to liberate some ingredient, either contained in a small quantity in the soil, or set free so slowly as to be insufficient for two successive crops of the same plant. Rotation, therefore, was not a means of improving the soil, as farmers generally supposed. It was only a means of delaying its exhaustion, and of enabling plants more completely to rob it of its treasures. Other processes produce a like result-as for example the paring and burning of land, which besides destroying weeds and organic matter, which might be injurious, completely altered the nature of the soil, plastic clays becoming porous, and admitting the oxygen which formerly was unable to liberate the nutritious ingredients of the soil; but sandy soils being reduced by it to a caput mortuum. The same evils did not, however, attend the burning of chalk as of limestone, as the liberation by it of a certain amount of silica of pot .h afforded new vigour to the lime-loving plants wh ... were afterwards cultivated upon them. The next analogous process in farming was liming the land, by which the silica, the potash, and the phosphatez were liberated amount from peas at the cost of only 17. 13s. Potafrom the soil and administered to the wants of vegetation. But by this operation no equivalent was furnished the land for that removed by the crops, and therefore the continuance of this system was mercly a continuance of a rapid system of exhausting the soil. It might, however, not unfrequently supply an absent to mention the relative degrees of nutriment in the seconstituent of the soil, and there was no manure sometimes r .re beneficially used, or sometimes more dis- concluded his lecture by saying he had now endeagracefu y abused, than this. All these processes had voured to convince them of the assistance which scimerely one object in view, the rendering soluble the ence and practice had rendered each other. He had

more fitted for the plants by exposure to the atmos- nutritious ingredients of the soil, not the supply of mawhich he would call true irrigation, warping, and liquid Under some circumstances, irrigating waters seemed to act as a direct manure. The other two kinds and but the great proportion of our soil was so impoverished, that it could no longer yield within a year all the necessary materials for crops. The ingredients geneproceed to return the soil to its original fertilty? Aniinals eat the vegetables which you have grown, these turn part of the organic matter of which they consist, and ultimately make it resort to the original form from which it sprung-carbonic acid, ammonia, and water. But with these we take little interest, for they went to be extracted from thence as before. But the valuable mineral treasures of the soil could not assume the form of air, and therefore they remained, the ashes of the consumer's food, and were voided in the solid and liquid excrements. If these were carefully collected cattle. From 10 acres of corn there was removed more than 13,000 lbs. of available silica; and unless this was replaced, it would be impossible plants should grow. Now, the excrements of animals must contain the food they eat, and therefore was best adapted for the growth of the same food. The best manure for plants was always found to be that of the animals which fed upon them. It was an important fact that human nature was wanting in silica of potash, which however, could be obtained very cheap at the manufacturers, and in nothing else. It was, therefore, among the most valuable of manures; and it was incredibly absurd that it should be permitted to run down and waste in the public sewers. He estimated the loss in this respect, in the metropolis alone, to be not less than 1,000,000? annually. Very important evidence on this point would be found in the report of the Health of Town Commissioners. He wished here, also, to say a word about the economy of food. If a person lived on potatoes, to get one hundred pounds of the gluten, in which consisted the nutriment, it would cost 2l. 14s.; whereas they would get the same toes, therefore, could not be considered as cheap food; but peas and potatoes together would afford an ex-tremely cheap nutriment. Dr. Buckland has shown that peas and beans were much more used in former times than now. The learned lecturer then proceeded veral plants which are generally used for food; and