ington, also. His farm must be large enough, with good care and cultivation, to support his household and improve their condition. It must be small enough to make convenient neighborhoods, hamlets and villages, with schools and churches, highways and motive of internal commerce and exchange. It must be small enough to have all its acres in use for field, orchard and garden, pasture and woodland. Waste, unused land in a country so rich in resources is an anomaly, which future population will correct.

NATURAL FERTILITY.

Agriculturists consider this to be the *average* of crop-power and of product for a series of years.

E. Lewis Sturtevant, M. D., Waushakum Farm, South Farmingham, Mass., says:

"Natural Fertility, as we shall define it, is the most important attribute to a farm, as being the contribution of nature to the farm products. It consists in the addition to the soil from the atmosphere from unaided natural resources, and from oxidations or disintegrations of the materials, which enter into the form in which they are available for plant growth. Where the natural fertility is in great abundance, the cost of seed and the expense in labor may be the only elements which arise to offset the profits, or in other words, which require to be deducted from the gross proceeds of a crop in order to ascertain the net returns. Thus, if the natural fertility of one field be sufficient to give an annual return of twenty bushels of wheat per acre (that is if the amount of plant food in an available form supplied each year by nature is equivalent to a twenty bushel crop) and the natural fertility of another field is equivalent to but ten bushels, the first field has a value of ten bushels of wheat to the farmer for all time in excess of the second field." * * * "The former farm may, through the application of skill, be always expected to return ample profit to the cultivator, and will respond with certainty to the effort of the cultivator, while the latter farm is continued in productiveness only through a constant expenditure."

This is the comparison as to Natural Fertility of some newer states on the Pacific, like Oregon and Washington, with Maine and Massachusetts, on the Atlantic coast. Our rocks are basalts, some of which oxidize and decompose rapidly in our wet climate, and form a deep rich soil, adapted to the cereals, vegetables and fruits, as well as to forests. Lands on the western slope of the Coast Range have the deepest soil and the largest natural growth of vegetation. They are almost untouched, but they await the woodman and the plough. Their native fertility is more than twenty-five bushels of wheat per acre, if well tilled. The valleys between the Coast and Cascade ranges, even to the hill tops, have had equal power for thirty years, when properly cultivated. The soil increases annually from decomposing rocks. Their oxidizing and disintegration are seen in the red hills and road cuts. When ploughed and reploughed very deep, and turned up well to the sun and air they pulverize more rapidly and repay the labor. No soil rewards good tillage more abundantly than these lands west of the Cascades. They contain good proportions of the alkalies—especially of potash and soda.

FERTILIZING.

This can be done with profit, both to feed the plant, and to aid decomposition of the coarser mineral elements. "The natural fertility of a soil," says Dr. Sturtevant, "may frequently be measured by a fallow. The best illustration we have, to find the natural fertility of a field, is offered in the experiments of Messrs. Lawes & Gilbert, in their Broadbalk field, as below:

"Plot 3, unmanured continuously, 12 years, 1852-63, 15½ bushels. . 12 years, 1864-75, 12⅜ bushels, or 24 years, 1852-75, average 14 bushels.

"Plot 20, unmanured continuously 24 years, 13 13-16 bushels.

"Plot 2, farm yard manure, 24 years, 1852-75, 35¼ bushels.

"Thus we have about 14 bushels for the natural fertility of the field, and 21 ¼ bushels as the production from 14 tons of applied manure."

This average shows what acquired fertility comes to poor native soils from common manuring. Such a test of these rich native soils of Western Oregon and Washington would reveal vastly greater gains. One well tilled field of ten acres without manure in Clackamas county, gave forty-seven bushels of wheat per acre.

A FALLOW GROUND PASTURE.

Hon. W. D. Hare said a few days ago that he sowed eighteen acres of fallow ground in Washington county in wheat, and when it came up he used it as a pasture, and turned in cows, horses, sheep and swine. All fed on it several weeks to keep it from heading out, and in order to return all its product back to the soil. It was then ploughed deep and well turned and reseeded with prospect of a very large crop. Another field of forty acres was ploughed down to the hard pan; then again through it, breaking it up, and turning up old straw and stubble that had been beded down for years, and then plowed a third time to the beam, turning up rich black loam. This was reduced to a fine tilth, with harrows and then sown, one bushel per acre. The field is now covered with wheat well up, thickly stooled, giving a prospect of a harvest of thirty to forty bushels per acre. No failure of crops has occurred here in thirty-four years. Every one who has tilled a garden or small field thoroughly has received a large reward for his work.

(To be continued.)

THE FUTURE MODEL FARM OF EASTERN OREGON AND EASTERN WASHINGTON.

By Rev. G. H. Atkinson.

STOCK RANGES.

The country east of the Cascades has been a stock range for twenty-five years. The native bunch grass of early spring and summer has been luxuriant, covering plains, valleys and hills, and often carpeting the mountains up to the snow line. It seeded and cured early, forming vast fields of most nutricious standing hay, upon which horses and cattle, and even sheep, fed in winter and kept fat, if snows were not too deep. To provide for hard winters, prudent stock men cut and stacked large quantities every year. Stock farmers from Western Oregon and Washington have been migrating for twenty years to these wide pasture lands east of the mountains, which extend from Nevada into British Columbia, over 600 miles from north to south, and from the summit of the Cascades to the Rocky Mountains, over 400 miles in width, including a large part of Idaho and Montana. Rugged mountains and forests intervene, and yet in late summer and autumn, they furnish the best grazing for flocks and herds.

THEIR SUCCESS.

These careful stock men have supplied the Oregon, Washington, British Columbia and California markets for many years with the best beef and mut