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years, and the yield was three times as great as that of any other forage plant. We know that alfalfa is very longlived. Fields in Mexico, it is claimed, have been continuously productive without re-planting for over two hundred years, and others in France are known to have flourished for more than a century. Its usual life in the United States is reckoned as probably from ten to twenty-five years, although there is a field in

there is a held in New Vielk state that has-been mown successively for over 60 years. Mr. Coburn in h is "Book of Alfalfa" suggests that "under its normal conditions and with normal care it would well-nigh be, as it is called, everlasting."

The Wonderful Root System

The root growth of alfalfa is probably the greatest of wonders. While it usually grows no higher than 4 or 5 feet (although it has been known to reach) more than 10 ft.)

and its normal height is about three feet, its roots go down ten, twenty or more feet, and one case is reported in Nevada where the roots were found penetrating through crevices in the roof of a tunnel one hundred and twenty nine feet below the surface of an alfalfa field! Professor W. P. Headden of Colorado found roots nine feet long from alfalfa only nine months old, and another reports seventeen inches long of but four weeks' growth, the plants being but six inches high.

It usually has a slender toproot, with many branches tend-



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ing downwards, yet with considerable lateral growth. As the tap-root is piercing the earth it is also sending out new fibrous roots, while the upper ones, decaving, are leaving humus and providing innumerable openings for air, the rains and fertilizing elements from the surface soil. The mechanical effect of this root growth and decay in the soil constitutes one of the greatest virtues of the plant, and by its roots alfalfa becomes self-acting, by far the most efficient, deep reaching sub-soiler and renovator known to agriculture.

The botanical name of alfalfa is "Medicago sativa." There are some 50 species of this genus, Medicago, that are known, but alfalfa and one or two others are all that are of practical value as made, we believe, of a far more thorough and painstaking character which tend to discredit the slip-shod experiments made by some growers who were entrusted with seed brought back by Professor Hansen.

It is not within the scope of this article to give the extended reports of our own Canadian experiments, such as were so exhaustively made last year under the direction of Professor Bedford, Deputy Minister of Agriculture in Manitoba and of the Saskatchewan Department, and which are being continued on a still more extended scale this year. These will be found elsewhere in the "Caradian Thresherman and Farmer" in due course. as well as all else that can be gathered as to the ascertained quali-

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Acclimation of alfalfa is a slow process, and numerous close observers think there are too many "adical differences in climate and possibly of soil between Turkestan and New Mexico, Manitoba or Saskatchewan to admit of this variety's becoming a pre-eminently valuable acquisition to North America generally. It is thought more reasonable to let the American-grown alfalfa gradually accustom itself, as it will, to any particular region, sowing seed from nearly the same latitude, and grown under as nearly as possible the conditions it will encounter in its new environment.

Experts Refuted

Not many things in the progress of agricultural science have more frequently upset the pronouncement of "experts" than al-

falfa growing has done. While certain oracles have been declaring that alalfa would only grow in certain soils and in certain climates, it has again and again shown its adaptability to nearly all climates and mostly all soils. It produces with a rainfall as scant as 14 inches and in the Gulf States of Ameriflourishes ca with 65 inches. It gives crops at an elevation of 8000 feet above sea level, and in Southern California it grows below sea level to a height of 6



The Larger the Stack the Less Waste of Hay from Exposure to the Weather

fodders. It is a true perennial, smooth, upright and branching.

In 1898 when there had been reported many failures in the alfalfa districts of the extreme North and the extreme Southwest, the U. S. Department of Agriculture sent Professor N. E. Hansen of South Dakota to Russia, especially the cold arid and semi-arid portions of Turkestan, to discover if possible a more hardy strain of alfalfa than that grown in America. He brought back several hundred bushels of seed which was distributed to government stations and individual experimenters in forty-seven states and territories.

The reports of its behavior varied greatly, some growers being enthusiastically in its favor, while most reported results below or not above the average from other sorts, and some practically a failure. Since that date, however, there have been trials ties and the limitations of different varieties.

Among other claims for Turkestan as distinguished from the ordinary alfalfa, the U. S. government officials in charge of its introduction and exploitation aver that its seed will germinate much quicker and the plants start into growth earlier under the same conditions than common alfalfa. The plants are more leafy, grow more rapidly and have a stronger, more vigorous root system. Another advantage which the Turkestan variety has is that the stems are more slender and less woody, the plants making a more nutritious hay of finer quality. That it will withstand drought under the same conditions better than ordinary alfalfa seems certain from the reports of the experimenters. In the West and Northwest, at least, it seems to be more productive both with and without irrigation."

feet or over, with nine cuttings a year, aggregating ten to twelve tons!

One authority positively announced "it will grow wherever corn will grow," and hardly had he said it when men from New York and Louisiana came forward and said they were growing it where corn would not grow. Another declares: "it will not grow over a hardpan or gumbo soil," and at once still another man from the Atlantic coast reports a good field of alfalfa with roots fifteen feet long that pass through six inches of hardpan which was so hard that it had to be broken with a pick axe in following the root!

A Kansas man writes that he has eighty acres which had stood 5 years at the time of writing and promises to continue indefinitely, yielding $4\frac{1}{2}$ tons from 3 cuttings a year, and the whole of it on gumbo soil where corn raising

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