tructive of vegetation, except for the interminable sage of the desert, an emblem of an arid startile soil. The great variation in temperature, from 80 to 90 degrees (Fahrenheit's, the thermometer generally used) during midday, to the freezing point and below it at night. 4. That the soils where not saline are so friable and sandy as to prevent the cultivable grasses, and consequently green pastures and meadows, from taking the place of the prairie grasses; for these (prairi grasses) it must be bore in mind, cannot be reset when once ploughed up. We shall make our remarks and quotations as short as possible referring those who wish for fuller information to Blodget's Climatology, chapters 4 and 5 chiefly, and to the many account, of travels across the continent.

1. The country through which the Northern Pacific Railroad is projected is mainly a de-sert. Let the reader examine a map of the United States, and he will find that one half of the Republic lies west of the meridian of Minnesota. This is the region of summer droughts (four to five months-the agricultural months-without rain ;) it corresponds in position on this continent with the de serts of the old world, with this difference-the desert of Sahara, being checked in its northward sweep by the Mediterranean Sea, the arid regin does not rise so high in Europe as in America, which has no such water to the north; but east of the Mediterranean the desert goes as high as in America. But when we reach British America, north of 49°, we come to the region of summer rainshence the vast tracts there up to latitude 60° of the finest agricultural country, wheat maturing north of 60°, and barley to 65 and even to 67°.

Blodget (chapters 4 and 5) compares the deserts which lie between the Mississippi and Pacific with the deserts of Africa and Asia, and says the proportion of desert is as great on this continent as on the eastern, 

tends, in general terms, from the sea on the west, at 25 to 30° north latitude, northeastward to the centre of the continent or beyond." (Blodget, chap. 5, p. 167.) The "centre of the continent" between

New York and San Francisco is about the meridian of the Western boundary of Minnesota. Those at all acquainted with the climates and desert areas of the United States, know how applicable Blodget's statement is to the greater portion of the country west of the 98° meridian. The cactus and artemisia are emblematical of the desert areas-the cactus covering the southern and the artemisia the northern part of this half of the Republic,

"The cactus is characteristic of the arid climates of North America'' (Blodget, p. 173.) "There is another class of plants of universal range in the dry areas of North America, having equal rank with the cactus -the artemisia of the desert. This is almost universal over the districts of the arid inte-rior,—it begins at the same line from the east, or at the 98th meridian nearly, [Minnesota goes to the 96th,] occupying the northern half as exclusively as the cactus does that of the South—its presence indicates a general barrenness for other vegetation, and a deficiency of grass. On the plains of the Upper Missouri, this artemisia or sage of the desert is a leading and almost exclusive form of vegetation. Another large and elevated sage desert exists between the mountains and Snake river [in the much praised Walla Walla country.] A large por-tion of the great plain of Columbia-is also occupied by the artemisia (id ch. 5, p. 144-5.)

The artemisia may take the place of the cactus in part from an adaption to saline and alkaline soils." (id p. 175.)

Here is a very different account of the Missouri and Columbia country on the line of the railway from that given in the pamphlets and "7-30 gold loan" puff bubbles,

2. The soils are so impregnated with salts and alkalies as to be destructive of vegetation except for the "interminable sage on the desert" an emolem of an arid sterile region.

I quote again from Blodget:

"There are distinguishing conditions of soil and surface of the whole of the region of the basins and of a large share of the plains and mountains in the interior and pacific divisions of the Continent. One of these is the great quantity of saline and alkaline elements in the soils of the surface, and this not only in the basins where they might be expected to exist, but in the plains and mountain slopes, which receive all the rain falling there;" [p. 157.] This region "commences at the 98th meridian very nearly [a little west of Minnesota.] The Salt Lake region near the Red River of the north being the first point at that latitude. From that point westward along the Missouri, saline lakes and marshes and alkaline effloressences are frequently on the plain both north and south, particularly at the Mauvaises terres, or bad lands, which name is applied to many parts of the great area included by the north-erly bend of the Missouri [latitude 48°] and extending nearly down to the Platte River The distinguishing plant of [latitude 42°.] these soils is the artemisia. The immense area occupied by family of plants from near the meridian of 100° to the Pacific, is noted as an impressive feature of its aspect by Fremont, Beckwith and others who have tra versed it." [id p. 158.]

Beckwith, speaking of the saline proper-ties of the soil which he states "are often

seen efflorescing u on the surface," says : "If science should develope the means of neutralizing their injurious effects, a material change of climate, providing a greatly increased quantity of aqueous vapour, would be required to bring any considerable extent of this arid region under cultivation." (Capt. Beckwith's report, p. 89.)

3. The great variation in temperature from 80 to 90 during the day to the freezing point and even below it at night, another characteris-

tic of that country. 'The next peculiarity (of those regions) is the great range of temperature in the daily changes. The heat of mid-day may be at 75 to 80° degrees, yet with the formation of ice, and a temperature of 30 or down to 24<sup>°</sup> degrees at suurise, (eight degrees below the freezing point,) and this is also general over this whole district. The altitude and arid surface both facilitate this daily variation." [Blodget, chap. 4, p. 150 60.] Lieut Mowry states that in August at the western border of the basin of the Columbia river, temperatures at noon were 90 to 98°, and at sunrise 33 to 39°. Beckwith found his ther-mometer at 87 to 92 at 3 p.m., and below the freezing point at night. (Koport p. 63.)

In considering the climates of the interior of North America, it must be borne in mind that the continent, which is two miles (or more than 10,000 feet) high in Mexico, spreads out like a fan northward, retaining a high altitude through the United States territories, but falling to 600 to 800 feet in British America. That even one mile in height (5280 feet) causes a fell of fifteen degress in temperature. Hence the anomaly of a milder climate going north.

friable as to prevent the cultivable grasses, and consequently the green pastures and meadows, from taking the place of the prairie grasses when these are ploughed up.

The pastures and meadows, with their accompanying blessings, the herds, flocks and dairy, have a value equal, if not superior, to the cereals. The prairie grasses make good pastures in their wild state, and grow where cultivated grasses will not; but when the country is tilled they must be ploughed up, and cannot be reset in regions even partial-ly deprived of summer rains. Blodget says (p. 451:) "When the turf of the native species is broken up, it is then almost in capable of reproduction, as they (the wild "When the turf of the native grasses) rarely produce seed, and never spread from the root." "Even east of the Mississippi the climate limits them through. high summer temperature and long droughts. West of the Mississippi [90th meridian] the climate is still less favorable, and as the soil has less of the retentive character in receding from the Mississippi, the favorite cultivated. (or pastures and meadows) almost wholly fail.'' (id 449.) (id 449.)

The grasses, our timothy and clover even, when grown from the seed, have such a slender hold of the soil, and are so feeble during the first summer, that they are easily killed by a drought of two or three months -a not uncommon occurrence in the western States even east of the Mississippi. Such droughts have, even in Ohio, destroyed the pastures, and more frequently in Illinois, Missouri, Kansas Iowa. West of the Mississippi the absence of rain during from three to five months-the agricultural monthsrenders it impossible to have pastures and meadows of cultivated grasses; and these have an economic value above that of wheat even. The region of the cultivable grasses is the same as that of the summer rainsroughly sketched in the temperate zones of this continent by the presence of forestswhere these fail the cultivable turf (or pastures) fail, unless in the higher latitudes with a more humid atmosphere Hence the vast areas in the Western States, even east of the Mississippi, unfavorable for pastures and of course for the dairy. Of most of the territory west of the Mississippi enough has been said to show that such pastures must almost totally fail. As a general rule the cultivable grasses fail south of 39 to 40° east of the Mississippi and at a higher latitude west of it. Over vast areas in the latitudes of Washington and Baltimore such grasses are killed both by the winter frosts and summer droughts. Hence Canada sends hay to Chicago, and to the Gulf States, and still retains enough to feed her own im-mense herds through her winters. Hence also the thousands of horn cattle, sheep and horses exported every year from the rich pastures of Canada to the States.

That there are fertile spots-oases in the deserts—I do not deny. I am not writing of exceptional cases. But none, out of the railway ring, could expect to get those in exchange for his "7.30 gold bonds;" they are always "already taken."

The peculiar climate of California, and we have the same in Australia and in other countries, requires a passing notice in this connection. "But California," it is often connection. "But California," it is often said, "is a good wheat country." So, also, I have seen Australian wate superior in appearance, not in value, to our own. In such local ties the wheat is sown in autumn and grows through their mild winters (the winter of San Francisco is 51°5', autumn 60°, and spring 56°.) and ripens in May (Blodget, p. 188.) But there being little or no rain in summer, such a clime is destructive of the 4. The soils of these interior regions under summer, such a clime is destructive of the discussion, where not saline, are so sandy and grasses and vegetables and grains as, sown