PUBLIC LANDS OF THE UNITED STATES.

The Hon. Joseph S. Wilson, Commissioner of U. S. Land Office for 1866, has made a report from which we have prepared the following.—He claims that prominent among the indications of the growth and prosperity of the republic is the gradual expansion of actual settlements over the immense fields of the public domain. Our liberal system of land legislation has extended, and still continues to afford facilities for opening new farms, founding new cities, holding out incentives for immigration from the crowded capitals of the elder States and from abroad by stipulations for the acquisition of real estate, either agricultural or city property, on terms so easy as to enable the industrious to secure homesteads almost at nominal rates. That system founded by the illustrious statesmen of the Revolution has been enlarged under the lights of experience to meet the wants of increasing millions of settlers by successive legislative acts, from the ordinance of 1785 for the disposal of the public lands to the legislative enactments of the year 1866. It has not restricted its benefits to merely opening rich and boundless fields to individual settlement; investing title in local communities for school purposes in every township of six miles square; in giving means for the endowment of seminaries of learning and universities; but it has made concessions, on a stupendous scale, for

internal improvements, for opening ordinary roads, for spanning the North American continent with railways, and still further, in meeting the wants of diversified localities by liberal provisions for works of this class to connect centres of trade, and afford rapid means of intercommunication.

The landed estate of the Union is the great inheritance of the American people. How was it acquired, and what is its extent?

The people of the United States, in emerging from the war of independence, were the holders of extensive regions of country falling within the out-boundaries of the United States, as acknowledged in the definitive treaty of peace in 1783 with Great Britain. These rear or western lands were claimed by several States on the Atlantic, on the ground of exclusive title, in some cases from ocean to ocean, and in others to an indefinite extent in the wilderness.

These conflicting interests gave rise to controversies and discord. The State of New York, now the centre of trade and affluence on this continent, destined in her career of prosperity to reach a pinnacle of greatness second to no commercial power of the globe, readily yielded her claim to the undefined territory, and, responding to the appeals of the revolutionary Congress, all other like adverse interests were surrendered, whereby the proprietary title of the United States to these western lands became absolute and complete.

The United States held no public lands in any of the original thirteen States, except for public uses, fortifications, arsenals, light-houses, and dock-yards. Vermont was not a party, as a State, to the Union of 1776, her territory having been claimed by New York and New Hampshire, but was admitted as a State in 1791, while Maine, which had been claimed and governed by Massachusetts, did not enter the Union until 1820.

Kentucky was originally part of the Territory of Virginia, but in 1792 was admitted, having no public lands within her limits. Tennessee, which formed a part of North Carolina, became a State of the Union in 1796, but the general government now holds no public lands within the limits of that State, the same having been relinquished by acts of Congress.

Excluding the area of all the States above mentioned from the surface of the republic as it existed in 1783, with limits extending from the northern lakes to the thirty-first degree of latitude, and from the Atlantic to the middle channel of the Mississippi, the residue constitutes the public lands of that year, equal to about 354,000 square miles, or 226,560,000 acres.

The whole of this area, every acre of it, has been completely surveyed, and the field-notes recorded, while accurate plats have been protracted exhibiting in legal subdivisions the entire surface, and all in exact accordance with the rectangular system. That system stands in marked contrast with irregularities as to *form* in the landed estate of the parent country, in which, although under the direction of men of exalted science, a cadastral survey, after the lapse of centuries of civilization, has not yet been completed, it having been estimated in 1863 that it would require an appropriation of £90,000 sterling a year, for twenty-one years, to extend such survey over the whole of the British islands.

Having thus shown the extent of our public lands as originally acquired, it is now in place briefly to trace their extension to the present limits.

By the treaty of peace in 1763, between England, France, and Spain, it

was agreed that the western boundary of the Anglo-American colonies should be fixed "irrevocably" by a line drawn along the middle channel of the river Mississippi, thereby relinquishing, in favor of France, all the territory claimed by the latter in the region west of the Mississippi.

This line consequently was received in 1783 as our western boundary, but within twenty years thereafter, a greater statesman (Mr. Jefferson) than the king who had acceded to this restriction took means to strengthen our claim to the region beyond the Rocky Mountains, by restoring to us the important link of continuity westward to the Pacific, which had been surrendered by the treaty of 1763. He considered it coincident with the public law, particularly in view of the American discovery, in 1792, of the mouth of the Columbia, to order an exploration of the Missouri and its branches to their sources, so as to trace out to its termination on the Pacific some stream "which might offer the most direct and practicable water communication across the continent for the purposes of commerce."

This measure was originated before the ratification, on 31st October, 1803, of the treaty whereby the French republic ceded to us the ancient province of Louisiana.

The Florida cession of 1819 from Spain followed, and then the admission of Texas in 1846, retaining her public lands. The treaty of that year with England, and the Mexican cessions of 1848 and 1853, completed our south-western limits on the Gulf, the Rio Grande, thence westward to the Pacific, and giving us frontier on that ocean and Puget Sound of one thousand six hundred and twenty miles; said cession of 1848 adding to the sea line we had on the Gulf of Mexico, under the Spanish cession of 1819, four hundred miles of coast, extending from the mouth of the Sabine to the Rio Grande, thus making our sea-coast line on the Atlantic, Gulf of Mexico, and on the Pacific, equal to five thousand one hundred and twenty miles.

By these important acts the public lands have been increased in extent nearly seven times their area at the close of the last century, and are now seventeen times the surface of the kingdom of Prussia, including her territorial increase growing out of the recent war with Austria.

They are in still larger ratio greater in area than England, Wales, Scotland, Ireland, including the Channel Islands and the other British European possessions.

The area of our domain was estimated some years ago at upwards of 1,450,000,000 of acres, but is now found, by calculations based on more specific data, to equal 1,465,468,800 acres.

The soil of the flourishing States of Ohio, Indiana, and Illinois, once a part of the national territory, has nearly all passed into individual ownership. The undisposed of portions of the public domain, in greater or lesser extent, exist in the northern regions of the Lakes Huron, Michigan, and Superior; in the southern, east of the Mississippi and fronting on the Gulf of Mexico; in the tier of States having that river as an eastern boundary, and still further westward in all the other political communities, States, and Territories, stretching to and over the Rocky Mountains, the Cascades, and Sierra Nevada, extending to the Pacific slope, with that ocean as a frontier, and the rich mineral State lying immediately east of and adjacent to the two great States of the Pacific.

What is the system, founded in legislation, by which this half conti-

nent is so dealt with and required to be administered that our own people and immigrants who propose to enter the American family can secure rights to settlements with complete, absolute, and indefeasible grants?

It is by the establishment, in the first instance, of surveying departments, now ten in number, with sixty-one land districts, each, when in operation, having a register and receiver to file applications, and take the steps required by statutory provisions as preliminary to the acquisition of inceptive and complete title.

In our present system of surveying the public lands, the lines under the first ordinance started from eastern Ohio; afterwards advanced into the old Natchez settlement, in the present State of Mississippi, and now penetrate to the southernmost cape of Florida, sweeping around the Pacific coast, from San Diego to the Straits of Fuca. Ever growing and extending, they now cover an immense surface. This was not the work of a single period, but of years of congressional legislation, and anxious and patient thought on the part of those from time to time intrusted with the execution of the laws.

It is a subject of interest to trace the progress of the improvement of the system since the treaty of Grenville, of 1795, the first public act by which the Indian title to lands northwest of the Ohio river was extinguished.

For the better regulating the surveys, as well as for convenience of description, meridian and base lines were found necessary, and accordingly instituted and established by law. In later years, particularly since the act of reorganization in 1836, the General Land Office has had direct and full control of the surveying departments. The surveying service since the act of reorganization has taken rapid strides forward in the way of improving the system in all its branches, by the selection of the peaks of the highest mountains as initial points of base lines and meridians.

As the convergency of the meridians must exist, and it is impossible to make ordinary measurements mathematically correct, on account of the inequalities of the earth's surface, and the imperfection of instruments, it is not the practice, as in early times, to rely upon a single meridian and and base line to check the surveys, but what are called guide meridians and correction lines or standard parallels have been instituted, which are all run as nearly as human skill can effect it upon true meridians and parallels of latitude.

This system, in perfect accordance with the sphericity of the earth, secures uniformity and beauty in our surveys, particularly over a large surface, which by any other method it would be impossible to attain.

The system adopted for guide meridians is to run them at convenient intervals, making offsets at each standard parallel equal to the convergency, which may be readily calculated and offsetted, even in advance of the survey of the standard parallels. Those parallels are run from the meridians and guide meridians, upon true parallels of latitude; one for every four or five townships in the high latitudes, as in Oregon and Washington, and from six to ten townships in the lower latitudes, while a set of township and section corners of the legal width, of six miles for each township, and one mile to each section, are marked and established thereon, without reference to the closing lines and corners of the townships and section lines south of the parallel, so as to take up and thus arrest the

convergency of the meridional lines of the surveys, inevitable in running from one standard parallel to the next succeeding one.

These delicate and widely extended operations require not only a theoretical knowledge of astronomical science, but also a practical acquaintance with all the instruments employed in field operations by the surveyors general, who have the direct control of them.

Among the most important surveying duties is the marking in the field of the lines and corners of the surveys in a distinct and durable manner.

These marks, when identified as the originals, placed there by the sworn deputy surveyor of the United States, constitute in fact the survey, taking precedence over field-notes, official plats, or any like evidence, controlling all future proceedings in re-survey, and respected accordingly in proceedings affecting title before the courts of the country.

The surveying laws and our system presuppose that occupants and others desiring to obtain titles from the Government are to have every facility in selecting and taking possession of the tracts they may purchase, and that in conforming their improvements to the marks they may find on the grounds, they may do so with the full assurance of their correctness, and that they cannot be disturbed by any future surveying operations.

Hence by the second section of the act of February 11, 1805, the corners and boundaries returned by the surveyor general are confirmed, and required to be taken and considered as the true corners and boundaries, and of these the field-notes and plats are merely the recorded description.

This system, so complete in itself, so simple and certain in fixing the lines upon the earth's surface, not only of town lots, but of agricultural lands, from 640, 320, 160, 80, and 40 acre tracts, has accomplished its work in Ohio, Indiana, Illinois, Michigan, Wisconsin, Iowa, Missouri, Arkansas, Mississippi, Alabama, and nearly so in Louisiana and Florida.

In those States are to be found climate, soil, and products equal to the wants and comforts of civilized man—cereals, esculents, and fruits in abundance, in the higher and in the middle latitudes, with the addition of the staples, tobacco and corn; while still further south are the cotton fields and sugar-cane, the orange, citron, and lemon.

Although the lines of the public surveys have been thus established, the system has yet further to advance upon the fields of Minnesota, northern and southern Dakota, in Montana, Kansas, Nebraska, Colorado, the Territories of New Mexico, Arizona, Utah, Idaho, Washington, and in the three great States, Nevada, Oregon, and California.

PRE-EMPTION LAWS.

The spirit of these enactments, first manifested in 1801, though checked three years afterwards, was developed in sixteen different statutes during the intervening period of forty years, and until 1841, when the prospective pre-emption acts of 1841 and 1843 were incorporated into our land legislation as a permanent policy, those laws reaching surveyed lands, offered and unoffered; later legislation extending the privilege to unsurveyed lands, with exceptions, from the Mississippi to the Pacific.

Then by the act of 3rd March, 1853, preference rights attach to alter-

nate even-numbered sections along the lines of railroads where settled upon and improved prior to final allotment of the granted sections, and to lands once covered by French, Spanish, or other grants declared invalid by the Supreme Court of the United States.

By act of 27th March, 1854, persons are secured in lands withheld for railroads where their settlements were made prior to the withdrawal from market.

The municipal town site law of 1844, the pre-emption provisions in the graduation act of 1854, gave way, the former to the town property and coal land legislation of 1864, 1865, the latter to the homestead statutes of 1862, 1864, 1866—the law of 30th May, 1862, intervening in regard to pre-emption and other important interests.

Property in land is among the first institutions of the State; its visible sign, the transformation it effects on the soil affording notice to others of the use of the tract appropriated, the settler identifying himself with it by the labor of his hands, and individualizing the same, as it were, by his own efforts.

In the progress of the system, which has conferred signal benefits upon settlers and the whole country, it is found that amendatory legislation is desirable to fix certain periods of limitation for consummating interests, and to generalize and give it greater efficiency. To this end, it is suggested that, in the case of settlements existing upon surveyed unoffered land, the settler shall, in all cases, file within three months from date of settlement, and establish his claim and pay up within twelve months from date of settlement; that where actual settlements may hereafter be made upon unsurveyed territory, the claimant, within three months after receipt at the district office of the township plat, shall file declaratory statement, and within twelve months thereafter prove up and pay for the tract; that there shall be a period of limitation fixed, within which appeals may be taken from the decision of the register and receiver and from that of the commissioner, and that where a right is initiated under the pre-emption laws it must in all cases, with limitation as to time, be consummated under those laws.

A legislative requirement to this effect would render each system, pre-emption and homestead, independent of each other, leaving them to work out their beneficial results without conflict, the settler always having the right, in the first instance, of choosing for himself under which of these systems he will make his settlement.

HOMESTEAD LAW.

The purpose of this measure is to hold out incentives for immigrants to identify themselves with the broad fields of the West, and secure their labor for such a period in the strength of manhood or maturity of life as will insure stability in settlements, development of arable resources, and steady increase of agricultural wealth.

This great original measure should stand unimpaired in its full vigor, and its results will continue to increase the producing power of the country. It has also been suggested whether the privilege should be enlarged by opening up unsurveyed lands to its operation.

We have large quantities of surveyed lands which are undisposed of, it

being the practice, as indicated in the foregoing, only to advance the lines where settlements are extending on arable lands. These fields, in genial climates and inviting localities, are now freely open to homestead settlements. We have surveyed acres enough to meet the demands of the multitudes that may settle upon them, each individual having the means of appropriating to his own use a farm marked out at large cost, and established with professional precision at public expense. A wise, liberal, munificent Government offers to every citizen, and to those who have taken the requisite step to become such—to the poor, the rich, all alike, a farm of liberal dimensions, and all at nominal prices, with the sole stipulation of five years' continuous settlement from date of entry. The labor called for is designed to operate directly to the advantage of the settler in making for him a comfortable home, and indirectly to the benefit of the country by adding to the aggregate wealth and prosperity of the republic. When the labor thus required is done, then the settler will get a fee-simple for 160 acres.

In well-settled communities an eighty-acre tract, well worked, is a handsome competence, so that, at the end of the five years' toil, the original settler may sell one-half of his tract, retain his farm, and in this way increase his active means, while in the progress of time and events, proceedings, under the impulse of necessity or interest, would lead to a duplication of the farms, and corresponding labor increase on the present surveyed domains.

In favoring measures that will concentrate settlements we give strength to local communities, and as the surveyed fields fill up, the surveyor, instruments in hand, will advance onward to establish his lines to meet increasing requirements.

The question has been raised in behalf of settlers whether a person who has availed himself of the benefits of the homestead, and pays for his claim under the eighth section of the act, can thereafter enter other land under pre-emption, provided he has never had the benefit of the latter statute.

On this point it has been ruled that where a party legally entitled makes an entry under the homestead law of May 20, 1862, and thereafter, at any time before the expiration of five years, shall come forward, make satisfactory proof of his actual settlement and cultivation to a given day, and then pay for the tract, the proceedings merely consummate his homestead right as the act allows; the payment being a legal substitution for the continuous labor the law would otherwise exact at his hands.

A claim of this character is not a pre-emption, but a homestead, and, as such, will be no bar to the same party acquiring a pre-emption right, provided he can legally show his right in virtue of actual settlement and cultivation on another tract at a period subsequent to the consummation of his homestead.

Cases have arisen where persons have made homestead settlements on unsurveyed tracts, and who, after the lines are established, find the premises falling in two different land districts.

The law restricts such settlements to *surveyed* lands, and hence, prior to survey, no rights attach under the statute. Then, as the law authorizes only *one* entry to be made by the same person, it is necessary for the party seeking the benefit of the statute to make the selection of his whole farm within one and the same land district. To entitle an applicant to enter

and must have the personal qualifications required by the general pre-emption laws.

The General Land Office holds that this limitation is clearly to *one* additional lot, and no more; that, had the legislative mind intended otherwise, the word *lots* would have been used instead of *lot*, as it now stands in the statute, but that the department will, in cases where expensive municipal or business improvements, as mills, warehouses, furnaces, machine shops, &c., are shown to exist, take care that no such interests shall suffer by the intrusion of an adverse claim, or purpose to purchase to the prejudice of the owner of such interest, such protection of course to be subordinate to the requirements of law in regard to public sales.

The substantial improvements for the purposes contemplated in this statute are understood to mean permanent buildings or works for municipal use; a mere enclosure by temporary fence for gardening or other incidental use not being considered as satisfying this requirement of law.

In some sections of the country cases of hardship have arisen under the provisions of the statute, and particularly on the Pacific slope, where some of the towns, the claims of which are pending under the acts of July 1, 1864, and March 3, 1865, have considerable population and are located upon old Mexican or Spanish grants but recently declared to be invalid, and where it is represented that many persons own more than two lots each, purchased oftentimes at great expense, and containing valuable improvements, upon which the claimants have paid taxes and received rents for many years, without any question ever having been raised as to their title.

It is claimed that to limit such persons to a pre-emption of but two lots, and to expose to sale other lots worth oftentimes thousands of dollars, and compel them to purchase the second time at their market value, or even to suffer them to pass into other hands without the consent of those who had held them under a title recognised as valid, in many cases for more than fifteen years, would be an act of great injustice.

It is also contended that in most of the new towns of the West, many of the lots and improvements are owned by persons residing elsewhere; that many of the miners in the western Territories purchase lots in the neighboring towns with the view of making their future residences upon them; and that where none but actual *residents* are allowed to pre-empt lots they must necessarily suffer loss, which in mining towns is oftentimes considerable, unless provision is made, which is recommended, to relieve this particular class of cases, and also to relieve the class possessing more than two lots, where the excess lot is covered by valuable improvements.

The aforesaid act of 1864 declares that where parties have founded or may desire to found a city or town on the public lands, it shall and may be lawful "for them to cause to be filed with the recorder for the county in which the land is situated a plat thereof for not exceeding 640 acres, describing its exterior boundaries," giving the name of the city or town, and exhibiting the streets, squares, blocks, lots, and alleys, the size of the same, with measurements and area of the municipal subdivision, the statement of the extent and general character of the improvements, the map and statement to be verified under oath by the party acting for and in behalf of the persons proposing to establish the city or town, and within one month after the filing there shall be transmitted to the General Land

Office a verified transcript map and statement, accompanied by the testimony of two witnesses, that such city or town has been established in good faith.

It is further required that the exterior lines of the whole city be run and *established* by *actual survey*, to be perpetuated by permanent visible objects, and said actual lines by a scientific surveyor must be shown on the map with the exact measurement of the exterior lines, and also of the municipal subdivisions as specifically designated in the statute.

The verified manuscript map is required to be sent to this office with an authenticated copy of the field-notes of survey. The map of survey must also be accompanied by the sworn statements of the parties as "to the extent and general character of the improvements," and with it should be transmitted a general map of the region, indicating the locality of the town site as near as possible to some prominent place in the geography of the country.

A point has been made as to the hardship of requiring municipal settlers to pay the cost of survey, while non-residents are permitted to purchase within the limits of a town who may not have contributed to the payment of the expense of such survey. This objection is obviated by restricting the survey to the area applied for by the settlers; yet should there be surplus lots not claimed, the sale of them would enhance the value of the settlement, as increase of population is increase of the productive power, thereby offsetting any inconsiderable outlay originally incurred in founding the city.

COAL LANDS.

The act of July 1, 1864, "for the disposal of coal lands and town property in the public domain," confers authority for offering at public sale to the highest bidder, in suitable legal subdivisions, portions of the public domain embracing coal beds or coal fields at a minimum price of twenty dollars per acre, any lands not thus disposed of to be thereafter liable to private entry at that minimum.

The supplemental act of March 3, 1865, provides, in the nature of a special pre-emption, for entering coal lands at that minimum, in quantities not exceeding one hundred and sixty acres, by citizens of the United States, *bona fide* engaged at the date of the act in the business of coal mining on the public lands, for the purpose of commerce.

A few entries of coal tracts have been made in California, in the counties of Contra Costa and Alameda, under the supplemental act of March 3, 1865, and are now undergoing official examination.

The coal of these mines is said to be excellent, and the market demand for it unlimited. It is quite apparent, however, that there are many places embracing coal beds and coal fields where the supply of coal is neither so extensive nor the quality so good, yet in which the scarcity of timber for fuel, and other causes, will lead to its being mined for the purposes of commerce. There are doubtless mines of this character which were thus worked at the date of the supplemental act, the claimants of which have taken no steps to enter them pursuant to that law.

Whilst the lands subject to entry under these acts are of every variety of value, from the best coal lands, in convenient localities, to those of the most inferior quality, in almost inaccessible places, the minimum at which

the same may be entered is fixed by the act at the same sum. It is worthy of consideration whether an amendment providing for the reduction of the twenty-dollar minimum might not be productive of good in cases where the veins of coal are thin, the quality inferior, or the labor of extracting it unusually great. This might be done by vesting power in the head of the department for making such reduction, where the facts in his judgment would justify.

The better to carry into effect the act of July 1, 1864, this office, on the 20th of August following, issued instructions to the surveyors general, and the registers and receivers of the different land districts, requiring them to institute proper inquiries as to the mineral character of the lands in their respective districts, to ascertain what tracts come within the meaning of the terms "coal beds" or "coal fields," and to report results.

On the 20th of April, 1865, further instructions were issued as to proceedings under the supplemental act of March 3, 1865. It is found that the information called for as to the quanities of land embracing coal beds or coal fields in the respective land districts can be but imperfectly furnished through the instrumentality of officers whose time is absorbed with other duties; yet from reports received, and other reliable sources, it is ascertained that coal is distributed in the public domain in large quantities. In Michigan, Ohio, Indiana, Illinois, Missouri, Iowa, and Alabama, its existence has long been known, and in many places it has been extentensively mined for commercial purposes. In Arkansas, Louisiana, Kansas, and California, numerous deposits of a superior quality have been discovered, whilst in Nevada and Oregon, and in the Territories of Washington, Idaho, Montana, Utah, Colorado, Dakota, New Mexico, and Nebraska, coal traces have been found within the last few years, indicating an abundant distribution. The coal field of Iowa and Missouri, passing through the eastern portions of Nebraska and Kansas, and the western part of Arkansas, extends diagonally through Texas and enters the republic of Mexico. The western limit of this extensive field is reported to lie about the 97th degree of west longitude, where the limestone formation is succeeded by the red saliferous sandstone. East of this meridian, in the extensive limestone formation, the great mineral coal measures occur, covering large portions of the States of Iowa and Missouri on the west of the Mississippi, and Illinois, Indiana, Ohio, and other States on the east of that river, and appearing in numerous traces in the regions bordering on the Nemaha, the Neosho, the Arkansas, and Canadian rivers.

Beyond the plains, along the base of the Rocky Mountains, and extending from the northern limits of New Mexico, through Colorado, and north of it to the Canada line, passing through Idaho, Oregon, and Washington, are the tertiary coal measures of the United States, containing many varieties of brown coal, useful not only for the ordinary purposes of fuel, but much of it excellent for steam navigation purposes.

These deposits are destined to be of immense importance in the future settlement of those extensive regions. Evidences are already quite numerous of its distribution in inexhaustible quantities along the headwaters of the Missouri, the Yellowstone, Big Horn, Powder, Platte, Greene, Columbia, and Willamette, and their tributaries. Bituminous coal of excellent quality exists in the Ratoon Mountains and other parts of New Mexico, in Nevada, and in Utah.

As the public surveys and settlements advance and increase in the now unsurveyed lands of the United States, the wants and exigencies of our people will, from time to time, bring to light further discoveries of this element of power and progress that now lies dormant in distant and imperfectly explored places.

The wealth of this country in the article of coal is beyond estimate.* This combustible substance is spread by the hand of Providence everywhere in such localities as to make it best subservient to the wants of our race, whose genius has developed and is continually applying its resistless forces.

Geology teaches that the primeval forests, and myriads of lesser vegetation, in the decay of ages, are changed by the secret agencies of nature into this important substance, and packed away in the earth for the use of man.

The aggregate area of the coal fields of the British North American Provinces, of Great Britain, France, Belgium, Rhenish Prussia, Westphalia, Bohemia, Saxony, Spain, and Russia, is reported as equal to sixteen thousand four hundred and ninety-four square miles, whilst the extent of those discovered in past years in the United States is estimated at two hundred thousand square miles. An able English writer, in discussing the bearings of this mineral fuel and the extent of it in the United States, declares that the possession of such an amazing deposit leads to the forecast of a future of almost boundless enterprise and production in America, describing it as a "fuel ever ready at a moment's preparation to generate a power the very opposite of man's nature, a power that transcends all others, yet known to be applicable to mechanical movements, that disdains narrow improvements, and wings us or wafts us over land or sea, that makes tens of thousands of wheels and spindles to revolve incessantly, that causes raw materials to be wrought into airy fabrics or solid structures, or that transports navies and armies, changes the character of warfare by accelerating the transfer of men and the munitions of war, decides the fate of battles, and determines the destiny of nations." Such is the agent abounding in the public domain, and everywhere accessible in our country, and which is now laboring in our machine shops, in our manufacturing establishments, whilst it is driving over our inland waters vessels of every size from a steam-tug to floating palaces, and is speeding to distant lands our ocean marine engaged in foreign trade, and carrying into every sea and every prominent port the huge and resistless engines of our naval forces, which attest the genius of this people and are symbols of our national power.

Interspersed with this valuable deposit are most of the other useful minerals upon the presence of which the wealth and prosperity of a nation measurably depend. The precious metals are deposited in three broad belts, stretching across the United States, one known as the "Appalachian gold field," traversing the older States of the Union in a line parallel with the Atlantic coast, and appearing in Virginia and North Carolina; the other as the "Rocky Mountain gold field," traversing all the more recently organized Territories of the United States, and the third as the

* Surface indications of coal meet the eye almost everywhere. The bituminous coal fields around Pittsburg have been estimated at eight million six hundred thousand acres. The [illegible] coal area is estimated to contain fifty-three thousand five hundred and sixteen millions of tons of coal.—*Sir Morton Peto, Resources of America*, page 180.

"Sierra Nevada gold field," extending through the country bordering on the Pacific.

Iron, the most useful of all metals, is at the same time the most generally distributed through the public land States* and Territories, whilst there is copper in immense quantities in the vicinity of the lakes east of the Mississippi, existing likewise in greater or lesser degree in the region extending from the Mississippi Valley to the Pacific, whilst lead, tin, and zinc are found in several of the States and Territories. The precious metals exist chiefly in California, in Nevada, in northeastern and southwestern Oregon, in Washington Territory, in Idaho, Montana, Colorado, southern Utah, New Mexico, and Arizona, scattered over an estimated area of a million square miles, and now yielding an annual product in gold and silver, according to the best attainable estimates, of over one hundred millions of dollars; California alone having produced in the precious metals since 1848 over one thousand millions of dollars, while the developing mines of Nevada, Colorado, Idaho, Montana, New Mexico, and Arizona are making large annual additions to the American yield of gold and silver.

PETROLEUM.

It appears from a semi-official report, in June last, received from the Surveyor General of California, that the petroleum oil belt extends in that State from the county of Humboldt on the north to Los Angelos on the south, a distance of over 700 miles, embracing twelve counties, to wit: Humboldt, Mendocino, Coluse, Sonoma, Contra Costa, Santa Clara, Santa Cruz, Monterey, San Luis Obispo, Santa Barbara, Los Angelos, and Tulare, in which oil in limited quantities, and some of superior quality, has been discovered; in fact, that the sandstone and shale of the whole coast range of mountains in most of these counties is so strongly saturated with petroleum oil as to burn in a furnace, being easy of excavation and assuming the appearance of tar or asphaltum where exposed to the air. It is found in some localities, particularly in the southern counties, in a fluid state, flowing out of the shale rocks in small rills, known by the residents as breor springs, chiefly in the cañons or gulches. The asphaltum or hardened oil exists in very large quantities on the surface, the formation of centuries, as supposed, and is used for fuel. One of the most remarkable springs mentioned is situated under the ocean, some three miles from the shore, opposite San Luis Obispo, and north of Point Concepcion, which, in calm weather, is said to cover the surface of the sea with oil for twenty miles; and another curious feature is found about six miles from Los Angelos, in the plain known as Tar Lake, from fifty to one hundred feet in diameter, which is filled with oil-tar, used by the inhabitants for roofing houses and other purposes.

Various experiments, it appears, have been in progress for obtaining the oil from the immense deposits of asphaltum and tar, extracting it from the sandstones and from springs by boring, which have met with partial success, but sufficient to warrant the belief that at no distant day a full supply may be obtained when adequate capital and machinery shall be supplied.

(To be Continued.)

* It is estimated that there is iron ore enough in Missouri alone to supply a million tons per annum of manufactured iron for the next two hundred years.—*Sir Morton Peto*, page 167.